

A1

Test Specifications Fuel Injection Pumps ① and Governors

PES 6 P 110 A 720/3 RS 3045
Komb.-Nr. 9 400 231 029

US-RQV 300/600-1050 PA 456 KR
PLE-Maß 0,740" - 0,820"

supersedes -
company MACK
engine ETZ 673
260 PS

Note VDT-I-MAC 002!

Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2-3,3
(3,15-3,35) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ / 100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	12,9±0,1	16,9-17,1	0,4			
300	5,5-5,7	1,1-2,1	0,4			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1050	16,2-17,8	-	-	-	ca.18,5	250	9,8-11,3	-	-
ca.63,5	11,9 4,0 1250	1090-1100 1175-1205 0 - 1,0				3a	300 400 650-710	7,9-8,1 3,8-5,2 = 2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery idle switching point	Torque-control	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8
1000	169,0-171,0	1090-1100*	750	169,5-172,5	100	110,0-170,0	1050
			600	149,5-152,5 PLE			1000
			300	101,0-109,0			900
							750
							600
							500

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 11,0 k 2 **40**

1. Edition

En

PES 6 P 110 A 720/3 RS 3036 US-RQV 300/600-1050 PA 520 K
Komb.-Nr. 9 400 231 049 PLE-Maß = 0,740"-0,820"

supersedes -
company MACK
engine ETSZ 676
285 PS

Note VDT-I-MAC 002!

Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{2,8-2,9}
(2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	13,6+0,1	20,9-21,1	0,4			
300	5,0-5,2		0,4			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1070	16,2-17,8	-	-	-	ca. 17,5	250	9,4-11,0	-	-
ca. 63	12,6 4,0 1230	1090-1100 1170-1200 0 - 1,0					300 400 685-745 = 2,0	7,9-8,1 3,8-5,2		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed limbation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1000	209,0-211,0	1090-1100	800	211,5-214,5	100	110,0-170,0	1050	13,5+0,1
			600	241,0-244,0			1000	13,6
			PLE				900	13,6+0,1
			300	129,0-137,0			800	14,0+0,1
							600	15,3+0,1
							500	15,2+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

BOSCH

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Test Specifications Fuel Injection Pumps ① and Governors

PES 6 P 110 A 720/3 RS 3045 US-RQV 300/600-1050 PA 463 K
Komb.-Nr. 9 400 231 035 PLE-MaB 0,740"-0,820"

supersedes -
company MACK
engine ETZ 675

Note VDT-I-MAC 002!

Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2-3,3
(3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,0+0,1	15,4-15,6	0,4			
300	5,5-5,7	1,1-2,1	0,4			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1050	16,2-17,8	-	-	-	ca.18,5	250 300	9,8-11,3 7,9-8,1	-	-
ca.63	11,0 4,0 1250	1090-1100 1165-1195 0 - 1,0				3a	400 670-730	3,8-5,2 =2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation intermediate speed		Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	
1000	154,0-156,0	1090-1100 *	800	170,5-173,5	100	110,0-170,0	1050	11,9+0,1	
			600	198,0-201,0			1000	12,0	
			300	110,0-118,0			800	12,6+0,1	
				PLE			700	13,4+0,1	
							600	14,1+0,1	
							500	14,0+0,1	

Checking values in brackets

* 1 mm less control rod travel than col. 2

①

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 11,0 i 3

40

1. Edition

En

PES 6 P 110 A 720/RS 3036

RQV 300/450-900 PA 400 KR

supersedes

Komb.-Mr. 9 400 231 002

PLE-Maß = 0,740" - 0,820"

company:

MACK

Note VDT-I-MAC 002!

Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

engine

ETAZ 673 c DOM

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

2,4-2,5
Port closing at prestroke (2,35-2,55) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	14,4+0,1	21,0-21,2	0,4			
300	5,0-5,2	1,3-2,3	0,4			

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	970	16,2-17,8	ca. 18,5	250	9,8-11,3	-	-	-	250	0,2-1,2
ca. 57	13,4 4,0 1200	940-950 1075-1105 0 - 1,0		300 400 575-635 = 2,0	7,9-8,1 3,8-5,2				480 710 950	3,8-4,3 5,5-5,9 8,2

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2		Rotational speed limitation intermediate speed 4a	Fuel delivery characteristics high idle speed 5b		Starting fuel delivery idle switching point 6		Torque-control travel 5	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
900	213,0-215,0	940-950*	725 600 300	220,5-223,5 197,5-200,5 PLE 99,0-107,0	100	110,0-170,0	900 725 600 500	14,4 14,6 13,6+0,1 13,2+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.83

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A5

①

Test Specifications Fuel Injection Pumps and Governors

①

VDT-WPP 001/4 MAC 11,0 z 1

1. Edition

40

En

US-PES 6 P 110 A 720 RS 6005

US-RQV 300/400-900 PA 575-1K

supersedes

Komb.-Nr. 9 400 231 137

PLE-Maß = 0,740" - 0,820"

company

Note VDT-I-MAC 002!

Values only apply to test nozzle-and-holder assembly 0 681 343 009

and fuel-injection test tubing

1 680 750 015

- MACK

E 6 - 315 R

315 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\begin{matrix} 2,4-2,5 \\ (2,35-2,55) \end{matrix}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	14,7+0,1	23,3-23,5	0,4			
300	5,1-5,3	1,3-2,3	0,4			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1020	15,2-17,8	-	-	-	ca. 19	250	9,4-10,8	-	-
ca. 61	13,7 4,0 1130	940-950 1070-1100 0 - 1,0				3a	300 400 530-590 = 2,0	7,9-8,1 3,3-4,7		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery Idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
900	232,5-234,5	940-950 *	725	244,0-247,0	100	110,0-170,0	900	14,6
			650	229,5-232,5			800	14,9+0,1
				PLE			725	14,9+0,1
			800	108,0-116,0			650	14,3+0,1
							500	13,2+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.83

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Testoil-ISO 4113

A6

①

Test Specifications Fuel Injection Pumps ① and Governors

40

VDT-WPP 001/4 MAC 11,0 r

1. Edition

En

US-PES 6 P 110 A 720/3 RS 6003

Komb.-Nr. 9 400 231 059

Note VDT-I-MAC 002!

Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

US-RQV 300/600-1050PA542K

PLE-Maß = 0,740" - 0,820"

supersedes

company

engine

- MACK

EM 6 - 237

235 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{3,5-3,6}
(3,45-3,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,3+0,1	17,6-17,8	0,4			
300	5,2-5,4	1,1-2,1	0,4			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1125	15,2-17,8	-	-	-	ca.21	250 300	9,5-11,0 7,9-8,1	-	-
ca.61	11,3 4,0 1230	1090-1100 1170-1200 0 - 1,0				3a	400 700-760	3,8-5,2 =2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2		Rotational-speed limitation intermediate speed 2b		Fuel delivery characteristics high idle speed 5b		Starting fuel delivery idle switching point 6		Torque-control travel 5	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	4a	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1000	175,5-177,5	1090-1100*		800	180,5-183,5	100	110,0-170,0	1050	12,3+0,1
				600	199,5-202,5			1000	12,3
				300	106,0-114,0			800	12,7+0,1
					PLE			700	13,0+0,1
								600	13,5+0,1
								500	13,1+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.83

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Testoil-ISO 4113

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Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 11,0 u

1. Edition

En

PES 6 P 110 A 720/3 RS 6002
Komb.-Nr. 9 400 231 065

US-RQV 300/500-950 PA 548 K
PLE-MaB = 0,740" - 0,820"

supersedes

company

engine

MACK

E 6 - 315

315 PS

Note VDT-I-MAC 002!

Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,4-2,5}{(2,35-2,55)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	14,7+0,1	23,2-23,4	0,4			
300	5,1-5,3	1,4-2,4	0,4			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1020	15,2-17,8	-	-	-	ca. 19	250 300	9,4-10,8 7,9-8,1	-	-
ca. 63	13,7 4,0 1180	990-1000 1110-1140 0 - 1,0				3a	400 535-595	3,3-4,7 =2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2		Rotational-speed limitation intermediate speed 2b	Fuel delivery characteristics high idle speed 5a		Starting fuel delivery idle switching point 6		Torque-control travel 5	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
900	232,0-234,0	990-1000 *	725	244,0-247,0	100	110,0-170,0	950	14,6+0,1
			650	226,5-229,5			900	14,7
			300	107,5-115,5			800	14,9+0,1
				PLE			725	14,9+0,1
							650	14,3+0,1
							500	13,2+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 11,0 r 2

1. Edition

En

US-PES 6 P 110 A 720/3 RS 6003 US-RQV 300/600-1050PA559K
 Komb.-Nr. 9 400 231 073 PLE-Maß = 0,740" - 0,820"
 Note VDT-I-MAC 002!
 Values only apply to test nozzle-and-holder assembly 0 681 343 009
 and fuel-injection test tubing 1 680 750 015

supersedes

company

engine:

MACK

EME 6 - 285

285 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\begin{matrix} 3,2-3,3 \\ (3,15-3,35) \end{matrix}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,7+0,1	20,6-20,8	0,4			
300	4,8-5,0	1,2-2,2	0,4			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1120	15,2-17,8	-	-	-	ca. 20	250	9,5-11,0	-	-
ca. 61,5	11,7	1090-1100					300	7,9-8,1		
	4,0	1185-1215					400	4,0-5,4		
	1240	0 - 1,0					710-770	=2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (4a)		Fuel delivery characteristics high idle speed (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel Control rod travel mm (5)	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	mm 9	
1000	206,0-208,0	1090-1100*	800	208,5-211,5	100	110,0-170,0	1050	12,6+0,1	
			600	228,5-231,5			1000	12,7	
			300	105,0-113,0			800	13,1+0,1	
				PLE			700	13,5+0,1	
							600	13,8+0,1	
							500	13,4+0,1	

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 11,0 i

1. Edition

En

PES 6 P 110 A 720/3 RS 3036

RQV 300/450-950 PA 369 KR

supersedes

Komb.-Nr. 0 402 036 703

PLE-Maß = 0,740"-0,820"

company:

MACK

Note VDT-I-MAC 002!

engine

ETAZ 673 A

Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,35-2,55) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	15,9+0,1	23,2-23,4	0,4			
300	5,6-5,8	1,5-2,5	0,4			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	970	16,2-17,8	-	-	-	ca. 18,5	250	9,8-11,3	250	0,2-1,2
ca. 63	14,9 4,0 1100	990-1000 1115-1145 0 - 1,0				3a	300 400 576-635 = 2,0	7,9-8,1 3,8-5,2 = 2,0	480 710 950	3,8-4,3 5,5-5,9 8,2

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b rev/min ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min ④		Starting fuel delivery idle switching point ⑥ rev/min ⑥		Torque-control travel ⑤ Control rod travel mm ⑨	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	mm 9
900	231,5-233,5	990-1100*	725	231,5-234,5	100	110,0-170,0 = ca. 12,0 mm RW	950	15,8+0,1
			600	105,5-108,5 PLE			900	15,9
			300	103,5-111,5			725	16,0+0,1
							700	15,9+0,1
							600	max. 15,2
							500	14,7+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.83

BOSCH

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Testoil-ISO 4113

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 11,0 w

1. Edition

En

PES 6 P 110 A 720/3 RS 6005
Komb.-Nr. 9 400 231 087

US-RQV 300/600-1050 PA 586 K
PLE-Maß = 0,740" - 0,820"

supersedes

company:

engine:

-

MACK

EM 6 - 285

285 PS

Note VDT-I-MAC 002!

Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,8-2,9}{(2,75-2,95)}$ mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ / 100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	13,3+0,1	21,0-21,2	0,4			
300	4,9-5,1	1,2-2,2	0,4			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1120	15,2-17,8	-	-	-	ca. 20	250	9,8-11,3	-	-
ca. 62	12,3 4,0 1240	1090-1100 1185-1215 0 - 1,0				3a	300 400 690-750	7,9-8,1 3,8-5,2 =2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed		Fuel delivery characteristics		Starting fuel delivery idle switching point		Torque-control	
rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	
1000	210,0-212,0	1090-1100 *	800	213,0-216,0	100	110,0-170,0	1050	13,1+0,1	
			600	240,0-243,0 PLE			1000	13,3	
			300	132,5-140,5			900	13,4+0,1	
							800	13,6+0,1	
							600	14,8+0,1	
							500	14,7+0,1	

Checking values in brackets

* 1 mm less control rod travel than col. 2

①

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 11,0 x

1. Edition

40

En

PES 6 P 110 A 720 RS 6006

US-RQV 300/600-1050 PA 587 K

supersedes

Komb.-Nr. 9 400 231 089

PLE-Maß = 0,740" - 0,820"

company:

MACK

Note VDT-I-MAC 002!

engine:

EM 6 - 237

Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

224 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{3,5-3,6}{(3,45-3,65)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,4+0,1	17,6-17,8	0,4			
300	5,3-5,5	1,1-2,1	0,4			

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1125	15,2-17,8	-	-	-	ca. 21	250	9,5-11,0	-	-
ca. 61	11,4 4,0 1230	1090-1100 1170-1200 0 - 1,0				3a	300 400 700-760	7,9-8,1 3,8-5,2 = 2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1000	175,5-177,5	1090-1100 *	800	180,5-183,5	100	110,0-170,0	1050	12,3+0,1
			600	200,0-203,0			1000	12,4
			PLE				800	12,7+0,1
			300	106,5-111,5			700	13,1+0,1
							600	13,4+0,1
							500	13,2+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.83

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①

Test Specifications Fuel Injection Pumps and Governors

40

① VDT-WPP 001/4 MAC 11,0 x 1

1. Edition

En

US-PES 6 P 110 A 720 RS 6006 US-RQV300/600-1050 PA 621 K
 Komb.-Nr. 9 400 231 101 PLE-Maß = 0,740"-0,820"
 Note VDT-I-MAC 002!
 Values only apply to test nozzle-and-holder assembly 0 681 343 009
 and fuel-injection test tubing 1 680 750 015

supersedes

company

engine

MACK

EM 6 - 250

250 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	11,5±0,1	18,6-18,8	0,4			
300	4,5-4,7	1,1-2,1	0,4			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1125	15,2-17,8	-	-	-	ca. 20	250	9,5-11,0	-	-
ca. 60,5	10,5 4,0 1230	1090-1100 1170-1200 0 - 1,0				3a	300 400 700-760	7,9-8,1 3,8-5,2 =2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤ Control rod travel mm	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	
1	2	3	4	5	6	7	8	9
1000	185,5-187,5	1090-1100 *	850	197,5-200,5	100	110,0-170,0	1050	11,4+0,1
			630	209,5-212,5			1000	11,5
				PLE			850	11,8+0,1
			500	146,5-154,5			750	12,0+0,1
							630	12,6+0,1
							500	12,2+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.83

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①

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 11,0 r 3

40

1. Edition

En

US-PES 6 P 110 A 720/3 RS 6003 US-RQV 300/600-1050PA593K

supersedes

Komb.-Nr. 9 400 231 097

PLE-Maß = 0,740"-0,820"

company:

MACK

Note VDT-I-MAC 002!

Values only apply to test nozzle-and-holder assembly 0 681 343 009

engine

EM 6 - 250

and fuel-injection test tubing

1 680 750 015

250 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2-3,3 mm (from BDC)
(3,15-3,35)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	11,5±0,1	18,7-18,9	0,4			
300	5,2-5,4	1,1-2,1	0,4			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm/rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1125	15,2-17,8	-	-	-	ca. 20	250	9,5-11,0	-	-
ca. 60,5	10,5 4,0 1230	1090-1100 1170-1200 0 - 1,0				3a	300 400 700-760	7,9-8,1 3,8-5,2 =2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2		Rotational-speed limitation intermediate speed 4a	Fuel delivery characteristics high idle speed 5b		Starting fuel delivery idle switching point 6		Torque-control travel 5	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1000	186,5-188,5	1090-1100 *	850	189,0-192,0	100	110,0-170,0	1050	11,4±0,1
			630	211,5-214,5			1000	11,5
			800	143,0-151,0			850	11,8±0,1
				PLE			750	12,0±0,1
							630	12,6±0,1
							500	12,2±0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

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Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 11,0 x 5

40

1. Edition

En

US-PES 6 P 110 A 720 RS 60C6

US-RQV 300/600-1050PA621-4K

supersedes

Komb.-Nr. 9 400 231 159

PLE-Maß = 0,740"-0,820"

company:

- MACK

Note VDT-I-MAC 002!

Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

engine

EME 6 - 300
300 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	14,0+0,1	21,6-21,8	0,4			
300	5,9-6,1	1,7-2,7	0,4			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1120	15,2-17,8	-	-	-	ca. 20	250	9,8-11,3	-	-
ca. 63	13,0 4,0 1255	1090-1100 1190-1220 0 - 1,0				3a	300 400 690-750	7,9-8,1 3,8-5,2 =2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed ②b limitation intermediate speed 4a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1050	215,5-217,5	1090-1100 *	850	214,5-217,5	100	110,0-170,0	1050	14,0
			630	233,5-236,5			950	14,0+0,1
			800	120,0-128,0			850	14,1+0,1
				PLE			750	14,5+0,1
							630	14,9+0,1
							500	14,4+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.83

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Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAC 11.0 v 3

1. Edition

US-PES 6 P 110 A 720/3 RS 6006

Komb.-Nr. 9 400 231 169

Note VDT-I-MAC 002!

Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

US-RQV 300/600-950PA621-6K

PLE-Maß = 0,740" - 0,820"

supersedes

company:

engine:

MACK

EME 6 - 300 R

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2-3,3
(3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
950	14,2+0,1	21,8-22,0	0,4			
300	5,5-5,7	2,0 - 2,3	0,4			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1020	15,2-17,8	-	-	-	ca. 20	250	9,8-11,3	-	-
ca. 62	13,2 4,0 1155	990-1000 1100-1130 0 - 1,0				③a	300 400 590-650	7,9-8,1 3,3-4,7 =2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5) Control rod travel mm	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	9
950	217,5-219,5	990-1000	850	215,0-218,0	100	110,0-170,0	950	14,2
			630	239,5-242,5			850	14,3+0,1
				PLE			750	14,7+0,1
			800	115,0-123,0			630	15,1+0,1
							500	14,6+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.83

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①

Test Specifications

Fuel Injection Pumps ①

and Governors

VDT-WPP 001/4 MAC 11,0 x 3

1. Edition

40

En

US-PES 6 P 110 A 720 RS 6006
Komb.-Nr. 9 400 231 155US-RQV 300/600-1050PA621-2K
PLE-Maß = 0,740"-0,820"supersedes
company:
engine:-
MACK
EME 6 - 250
250 PS

Note VDT-I-MAC 002!

Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2-3,3 mm (from BDC)
(3,15-3,35)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	11,9±0,1	18,9-19,1	0,4			
300	6,3-6,5	1,4-2,4	0,4			

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1120	15,2-17,8	-	-	-	ca.20	250	9,8-11,3	-	-
ca.62	10,9 4,0 1240	1090-1100 1165-1195 0 - 1,0				3a	300 400 690-750	7,9-8,1 3,8-5,2 =2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5) Control rod travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	9
1050	188,5-190,5	1090-1100 *	850	197,5-200,5	100	110,0-170,0	1050	11,9
			630	210,5-213,5			950	11,9±0,1
			PLE				850	12,0±0,1
			800	134,0-142,0			750	12,2±0,1
							630	12,6±0,1
							500	12,2±0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

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①

Test Specifications Fuel Injection Pumps ① and Governors

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VDT-WPP 001/4 MAC 11,0 w 1

1. Edition

En

US-PES 6 P 110 A 720 RS 6005 US-RQV 300/600-1050PA586-2K
Komb.-Nr. 9 400 231 131 PLE-Maß 0,740"-0,820"

supersedes

company

engine

-

MACK

EM 6 - 285

285 PS

Note VDT-I-MAC 002!

Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,8-2,9$ mm (from BDC)
(2,75-2,95)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	13,4+0,1	21,2-21,4	0,4			
300	4,9-5,1	1,2-2,2	0,4			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1120	15,2-17,8	-	-	-	ca. 20	250	9,8-11,3	-	-
ca. 62	12,4 4,0 1240	1090-1100 1185-1215 0 - 1,0				3a	300 400 690-750 = 2,0	7,9-8,1 3,8-5,2 = 2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics (5a) high idle speed (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5) Control rod travel mm	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	mm 9
1000	211,5-213,5	1090-1100 *	800	213,0-216,0	100	110,0-170,0	1050	13,3+0,1
			600	242,0-245,0			1000	13,4
				PLE			800	13,8+0,1
			800	147,0-155,0			700	14,5+0,1
							600	14,9+0,1
							500	14,9+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

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Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 11,0 j 1

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1. Edition

En

US-PES 6 P 110 A 720/3 RS 6009 US-RQV 300/500-1050PA543-2K
Komb.-Nr. 9 400 231 149 PLE-Maß = 0,740"-0,820"

supersedes

company

engine

Note VDT-I-MAC 002!

Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

- MACK

EE - 260

260 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2-3,3
(3,15-3,35) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1050	12,0+0,1	16,6-16,8	0,4			
300	6,0-6,2	1,1 - 2,1	0,4			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1120	15,2-17,8	-	-	-	ca.20,5	250	9,8-11,3	-	-
ca.61,5	11,0 4,0 1225	1090-1100 1165-1195 0 - 1,0				3a	300 400 690-750=2,0	7,9-8,1 3,8-5,2 =2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b)	Fuel delivery characteristics high idle speed (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm ³ /1000 strokes	rev/min (4a)	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1050	166,0-168,0	1090-1100 *	750	171,5-174,5	100	110,0-170,0	1050	12,0
			600	159,5-162,5			1000	12,0+0,1
				PLE			900	12,1+0,1
			800	123,0-131,0			750	12,2+0,1
							600	11,5+0,1
							500	11,3+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.83

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Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 11,0 i 7

1. Edition

En

PES 6 P 110 A 720/3 RS 3036 US-RQV 300/450-950 PA 521 K
Komb.-Nr. 9 400 231 051 PLE-Maß = 0,740"-0,820"

supersedes

company:

-

MACK
ETSZ 673 A
315 PS

Note VDT-I-MAC 002!

Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,4-2,5}{(2,35-2,55)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	14,7+0,1	22,7 - 22,9	0,4			
300	4,8-5,0	1,3-2,3	0,4			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	970	16,2-17,8	-	-	-	ca. 18	250	9,7-11,2	-	-
ca. 63	13,7 4,0 1200	990-1000 1100-1130 0 - 1,0				3a	300 400 590-650	7,9-8,1 4,0-5,5 =2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ④a	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
900	227,0-229,0	990-1000 *	725	235,5-238,5	100	110,0-170,0	950	14,6+0,1
			650	219,0-222,0			900	14,7
			300	103,0-111,0			725	14,9+0,1
				PLE			700	14,8+0,1
							650	14,3+0,1
							500	13,3+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.83

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Testoil-ISO 4113

①

Test Specifications Fuel Injection Pumps ① and Governors

40

VDT-WPP 001/4 MAC 11,0 x 4

1. Edition

En

US-PES 6 P 110 A 720 RS 6006 US-RQV 300/600-1050PA621-3K
Komb.-Nr. 9 400 231 157 PLE-Maß = 0,740"-0,820"

supersedes

company:

engine:

-

MACK

EME 6 - 300

300 PS

Note VDT-I-MAC 002!

Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke		mm (from BDC)					
Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning	
rev/min	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm	
1	2	3	4	2	3	6	
1050	14,0+0,1	21,3-21,5	0,4				
300	5,9-6,1	1,7-2,7	0,4				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1120	15,2-17,8	-	-	-	ca. 20	250	9,8-11,3	-	-
ca. 63	13,0 4,0 1255	1090-1100 1190-1220 0 - 1,0				3a	300 400 690-750	7,9-8,1 3,8-5,2 =2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery		Rotational speed		Fuel delivery characteristics		Starting fuel delivery		Torque-control	
Control-rod stop	Test oil temp. 40°C (104°F)	limitation	intermediate speed	high idle speed	switching point	idle	Control rod travel	rev/min	mm
Test oil temp. 40°C (104°F)									
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm	
1	2	3	4	5	6	7	8	9	
1050	212,5-214,5	1090-1100 *	850	210,0-213,0	100	110,0-170,0	1050	14,0	
			630	235,0-238,0			950	14,0+0,1	
			PLE	128,0-136,0			850	14,1+0,1	
							750	14,6+0,1	
							630	15,2+0,1	
							500	14,6+0,1	

Checking values in brackets

* 1 mm less control rod travel than col 2

3.83

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A21

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 11,0 v

1. Edition

En

US-PES 6 P 110 A 720 RS 6006 US-RQV 300/600-950 PA621-8K

supersedes

Komb.-Nr. 9 400 231 173

PLE-Maß = 0,740"-0,820"

company

-

Note VDT-I-MAC 002!

engine

MACK
EME 6 - 250 R
250 PSValues only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2-3,3
(3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
950	11,7+0,1	18,1-18,3	0,4			
300	5,2-5,4	1,8-2,8	0,4			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever mm 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3 ①a	Degree of deflection of control lever mm 4	rev/min 5	Control rod travel mm 6 ④	Degree of deflection of control lever mm 7	rev/min 8	Control rod travel mm 9 ③	rev/min 10	mm 11
max.	1020	15,2-17,8	-	-	-	ca. 18	250 300	9,8-11,3 7,9-8,1	-	-
ca. 61	10,7 4,0	990-1000 1065-1095				③a	400 590-650	3,3-4,7 =2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery Idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3 ④a	rev/min 4	cm ³ /1000 strokes 5 ⑤b	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
950	181,0-183,0	990-1000 *	850	183,5-186,5	100	110,0-170,0	950	11,7
			630	199,5-202,5			850	11,9+0,1
				PLE			750	12,2+0,1
			800	115,0-123,0			630	12,8+0,1
							500	12,1+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.83

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Testoil-ISO 4113

Test Specifications

Fuel Injection Pumps ①

and Governors

VDT-WPP 001/4 MAC 10,8 b

1. Edition

40

En

PES 6 P 110 A 720/3 RS 357 RQV 300/600-1050 PA 382 KR
Komb.-Nr. 0 402 036 034 PLE-Maß = 0,740"-0,820"

supersedes

company:

engine:

- MACK

ENDT 675 DOM

Note VDT-I-MAC 002!

Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{2,8-2,9}
(2,75-2,95) mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm
1	2	3	4	2	3	6
1000	12,1+0,1	14,9-15,1	0,4			
300	5,0-5,2	0,8-1,8	0,4			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1050	16,2-17,8	-	-	-	ca. 18	250	9,8-11,3	-	-
ca. 63	11,1 4,0 1230	1090-1100 1160-1190 0 - 1,0				3a	300 400 650-710=2,0	7,9-8,1 3,8-5,2		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery		Rotational-speed limitation		Fuel delivery characteristics		Starting fuel delivery		Torque-control travel	
Control-rod stop		intermediate speed		high idle speed		idle switching point			
rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	
1000	148,5-150,5	1090-1100 *	800	166,0-169,0	100	110,0-170,0 = ca. 21,0 mm RW	1000	12,1	
			600	182,5-185,5			800	12,6+0,1	
			300	117,5-125,5			600	13,4+0,1	
							500	max. 13,2	

Checking values in brackets

* 1 mm less control rod travel than col. 2

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3.83

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 11,0 i 1

1. Edition

En

PES 6 P 110 A 720/3 RS 3036 RQV 300/450-950 PA 372 KR
Komb.-Nr. 0402 036 711 PLE-Maß = 0,740"-0,820"

supersedes -
company MACK
ETAY 673 A
engine
0 681 343 009
1 680 750 015

Note VDT-I-MAC 002!

Values only apply to test nozzle-and-holder assembly
and fuel-injection test tubing

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,4-2,5}{(2,35-2,55)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	15,2±0,1	23,3 - 23,5	0,4			
300	5,0-5,2	1,3-2,3	0,4			

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
ca. 69,5	970 1050 1100 1200	15,5-18,0 7,0-11,6 1,7- 7,8 0	-	-	-	ca. 19,5	250 300 450 600 700 760	9,8-11,3 7,5- 8,5 3,2- 4,8 1,3- 2,5 0 - 0,8 0	-	-

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery idle switching point ⑥	Torque-control travel ⑤ Control rod travel		
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	mm 9
900	233,0-235,0	990-1000 *	725 600 300	237,0-240,0 219,0-222,0 PLE 104,0-112,0	100	110,0-170,0 = ca. 12,0 mm RW	900 725 600 500	15,2 15,4 14,6 14,0

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.83

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Test Specifications Fuel Injection Pumps and Governors

① VDT-WPP 001/4 MAC 11,0 j 2
1. Edition

40

En

US-PES 6 P 110 A 720/3 RS 6009 US-RQV 300/600-1050PA543K
Komb.-Nr. 9 400 231 061 PLE-Maß = 0,740"-0,820"
Note VDT-I-MAC 002!
Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

supersedes -
company MACK
engine E 6 - 250
250 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2-3,3 mm (from BDC)
(3,15-3,35)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,9±0,1	16,8-17,0	0,4			
300	6,2-6,4	1,1-2,1	0,4			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1125	15,2-17,8	-	-	-	ca. 20,5	250	9,5-11,0	-	-
ca. 61	11,9 4,0 1225	1090-1100 1170-1200 0 - 1,0				3a	300 400 700-760	7,9-8,1 3,9-5,3 =2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (4a)	Fuel delivery characteristics high idle speed (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel Control rod travel mm (5)	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	
1	2	3	4	5	6	7	8	9
1000	169,0-171,0	1090-1000 *	750	169,5-172,5	100	110,0-170,0	1050	12,9±0,1
			650	155,5-158,5			1000	12,9
				PLE			900	12,8±0,1
			300	101,0-109,0			750	12,8±0,1
							650	12,3±0,1
							500	11,7±0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.83

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Testoil-ISO 4113

Test Specifications

Fuel Injection Pumps ①

and Governors

US-PES 6 P 110 A 720/3 RS 6003 US-RQV 300/600-1050FA557

Komb.-Nr. 9 400 231 069

PLE-MaB = 0,740"-0,820"

supersedes -

company MACK

Note VDT-I-MAC 002!

engine

EME 6 - 237

Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{3,2-3,3}{(3,15-3,35)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	11,4+0,1	16,3-16,5	0,4			
300	5,3-5,5	1,2-2,2	0,4			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1125	15,2-17,8	-	-	-	ca.20,5	250	9,5-11,0	-	-
ca.60,5	10,4 4,0 1230	1090-1100 1170-1200 0 - 1,0				3a	300 400 700-760	7,9-8,1 3,8-5,2 =2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ②		Rotational speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1000	162,5-164,5	1090-1100*	800	173,0-176,0	100	110,0-170,0	1050	11,3+0,1
			600	192,0-195,0			1000	11,4
			300	125,5-133,5			800	11,8+0,1
							700	12,4+0,1
							600	12,7+0,1
							500	12,3+0,1

Checking values in brackets

* 1 mm less control rod travel than col 2

①

Test Specifications

Fuel Injection Pumps ①

and Governors

WPP 001/4 MAC 10,9 a
1. Edition

En

US-PES6P120A720RS6008-1 US-RQV300/500-975PA591-1K

supersedes

company: Mack

engine: EE 6 - 350
350 PS

PLE-Maß = 0,740" - 0,820"

See Service Information VDT-I-MAC 002!

Komb. - Nr. 9 400 231 147

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke $\begin{matrix} 3,2-3,3 \\ (3,15-3,35) \end{matrix}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
975	14,4+0,1	26,7 - 26,9	0,4			
300	5,8-6,0	1,3 - 2,3	0,4			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1080	15,2-17,8	-	-	-	ca. 20	250	9,8-11,3	-	-
ca. 59	13,2 4,0 1200	1015-1025 1140-1170 0 - 1,0					300 400 690-750 = 2,0	7,9-8,1 3,8-5,2 2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery idle switching point		Torque-control travel	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
975	267,0-269,0	1015-1025 *	700	275,0-278,0	100	125,0-135,0	975	14,4
			650	264,5-267,5			900	14,4+0,1
				PLE			800	14,4+0,1
			800	145,5-153,5			700	14,5+0,1
							650	14,1+0,1
							500	13,0+0,1

Checking values in brackets

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067.

* 1 mm less control rod travel than col. 2

3.83

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B3

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAC 10,9 a 1
1. Edition

En

US-PES6P120A720RS6008-1 US-RQV300/500-975PA591-2K
Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067.

supersedes -

company: Mack

engine: EE 6 - 350
350 PS

PLE-Maß = 0,740" - 0.820"

See Service Information VDT-I-MAC 002!

Komb. - Nr. 9 400 231 165

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke $3,2 - 3,3$
(3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
975	14,4+0,1	26,7 - 26,9	0,4			
300	5,4-5,6	1,2 - 2,2	0,4			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1120	15,2-17,8	-	-	-	ca. 19	250	9,8-11,3	-	-
ca. 59	13,4	1015-1025					300	7,9-8,1		
	4,0	1140-1170					400	3,8-5,2		
	1200	0 - 1,0					690-750 = 2,0			

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed	Fuel delivery characteristics		Starting fuel delivery	Torque-control	
rev/min	cm ³ /1000 strokes	intermediate speed	high idle speed	idle	idle switching point	travel	Control rod travel
1	2	3	4	5	6	7	8
975	266,5-268,5	1015-1025 *	700	273,0-276,0	100	125,0-135,0	975
			650	265,0-268,0			900
			800	144,5-152,5			800
				PLE			700
							650
							500

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.83

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Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 11,0 p

1. Edition

En

PES 6 P 110 A 720/3 RS 3036 RQV 300/600-900 PA 453 K

supersedes

PLE-Maß = 0,740"-0,820"

company:

MACK

Note VDT-I-MAC 002!

engine:

ETA 676 E

Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

306 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,40-2,50 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	14,4+0,1	22,2-22,4	0,4			
300	5,5-5,7	1,3-2,3				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	970	16,2-17,8	-	-	-	ca. 18,5	100 300 400 570-630	min. 10 7,9-8,1 3,8-5,2 =2,0	300 600 960	1,2-2,1 4,5-5,0 8,3
ca. 54	13,4 4,0 1200	940-950 1100-1130 0 - 1,0				3a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (4a)	Fuel delivery characteristics (5a) high idle speed (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5) Control rod travel mm	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	mm 9
LDA 900	1,6 bar 222,0-224,0	940-950*	LDA 600 LDA 600 300	1,6 bar 240,5-243,5 0 bar 141,5-144,5 PLE 103,0-111,0	100	110,0-170,0	900 800 700 600 500	14,4 14,5+0,1 14,7+0,1 15,2+0,1 14,9+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

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D. Adjustment Test for Manifold Pressure Compensator

MAC 11,0 p -2-

Test at n = rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
3036 + 453K	Start 0,40-0,41	end 1,08-1,10	

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 11,0 k 5

1. Edition

40

En

PES 6 P 110 A 720/3 RS 3036 US-RQV 300/600-1050 PA 482 K
Komb.-Nr. 9 400 231 037 PLE-Maß = 0,740" - 0,820"

supersedes

company

engine

MACK

ETA 676 B

Note VDT-I-MAC 002!

Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,35-2,55) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	14,6+0,1	22,6-22,8	0,4			
300	5,3-5,5	0,8-1,8	0,4			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1070	16,2-17,8	ca. 49	13,7 4,0	940-950 1115-1145	ca. 18,5	250 300	9,8-11,3 7,9-8,1	-	-
ca. 63	13,6 4,0 1270	1090-1100 1205-1235 0 - 1,0				3a	400 680-740 =2,0	3,8-5,2		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery Idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1000	226,0-228,0	1090-1100 *	800	226,5-229,5	100	110,0-190,0	1050	14,6+0,1
			600	240,5-243,5			1000	14,6
			300	115,0-123,0			800	14,7+0,1
				PLE			700	14,8+0,1
							600	15,3+0,1
							500	15,0+0,1

Checking values in brackets

* 1 mm less control rod travel than col 2

3.83

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Testoil-ISO 4113

B7

B7

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 10,8 a

1. Edition

En

PES 6 P 110 A 720/3 RS 357 RQV 275-1050 PA 381 KR

supersedes -

company:

MACK

engine

END 673 E
(180 HP)

Note VDT-I-MAC 002!

Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9,5-9,6	9,6-9,8	0,4			
275	5,0	0,8-1,8				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
ca. 66	1050	15,0-17,8	-	-	-	ca. 10	150	7,2-8,0	250	0,7-1,8
	1100	9,8-14,0					250	4,5-6,4	400	3,1-3,7
	1150	4,0- 9,6					400	2,4-3,6	900	6,0-6,4
	1260	0					680	0	1050	8,3

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery Idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1000	95,5-97,5	1090-1100 *	700	109,0-113,0	100	140,0-170,0	1050	9,5+0,1
					275	14,0- 24,0	900	9,7+0,1
							800	9,9+0,1
							600	10,2+0,1
							500	9,9+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

①

Test Specifications Fuel Injection Pumps ① and Governors

40

VDT-WPP 001/4 MAC 11,0 z

1. Edition

En

US-PES 6 P 110 A 720 RS 6005

US-RQV 300/500-950 PA548-2K

supersedes

-

Komb.-Nr. 9 400 231 133

PLE-Maß = 0,740"-0,820"

company:

MACK

Note VDT-I-MAC 002!

engine:

E 6 - 315

Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

315 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

2,4-2,5

(2,35-2,55)

mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
900	14,7+0,1	23,2-23,4	0,4			
300	5,1-5,3	1,4-2,4	0,4			

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1020	15,2-17,8	-	-	-	ca. 19	250	9,4-10,8	-	-
ca. 63	13,7 4,0 1180	990-1000 1110-1140 0 - 1,0				3a	300 400 535-595	7,9-8,1 3,3-4,7 =2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed		Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	
900	232,0-234,0	990-1000*	725	247,0-250,0	100	110,0-170,0	950	14,6+0,1	
			650	226,5-229,5			900	14,7	
			800	108,0-116,0			800	14,9+0,1	
				PLE			725	14,9+0,1	
							650	14,3+0,1	
							500	13,2+0,1	

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.83

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B9

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Test Specifications Fuel Injection Pumps ① and Governors

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VDT-WPP 001/4 MAC 11,0 k 3

1. Edition

En

PES 6 P 110 A 720/3 RS 3036 US-RQV 300/600-1050 PA 447 KR
 Komb.-Nr. 9 400 231 021 PLE-Maß = 0,740"-0,820"
 Note VDT-I-MAC 002!
 Values only apply to test nozzle-and-holder assembly 0 681 343 009
 and fuel-injection test tubing 1 680 750 015

supersedes

company

engine

-

MACK

ENDT 676

285 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,8-2,9}{(2,75-2,95)}$ mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm
1	2	3	4	2	3	6
1000	14,1+0,1	22,6-22,8	0,4			
300	5,0-5,2	1,3-2,3	0,4			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1070	16,2-17,8	-	-	-	ca. 18	250 300	9,8-11,3 7,9-8,1	-	-
ca. 63	13,1 4,0 1280	1090-1100 1190-1220 0 - 1,0				3a	400 680-740	3,8-5,2 =2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery		Rotational speed	Fuel delivery characteristics		Starting fuel delivery		Torque-control	
Control rod stop		limitation	high idle speed		idle		travel	
Test oil temp. 40°C (104°F)		intermediate speed			switching point			
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel
1	2	3	4	5	6	7	8	mm
1000	226,0-228,0	1090-1100 *	800	225,5-228,5	100	110,0-170,0	1050	14,1+0,1
							1000	14,1
							900	14,1+0,1
			600	240,0-243,0			800	14,4+0,1
				PLE			600	15,0+0,1
			300	130,0-138,0			500	14,6+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.83

Testoil-ISO 4113

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B10

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Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 11,0 i 4

1. Edition

En

PES 6 P 110 A 720/3 RS 3036 US-RQV 300/450-950 PA 446 KR

supersedes

Komb.-Nr. 9 400 231 019

PLE-Maß = 0,740" - 0,820"

company:

Note VDT-I-MAC 002!

Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

-

MACK
ETAY 673 A
315 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

2,4-2,5
(2,45-2,55) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	15,1+0,1	23,3 - 23,5	0,4			
300	5,0-5,2	1,4 - 2,4	0,4			

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	970	16,2-17,8	-	-	-	ca. 18,5	250 300	9,8-11,3 7,9- 8,1	-	-
ca. 63	14,1 4,0 1210	990-1000 1120-1150 0 - 1,0				3a	400 575 - 635 = 2,0			

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control ⑤ travel Control rod travel mm	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	mm 9
900	233,0-235,0	990-1000 *	725	239,5-242,5	100	110,0-170,0	950	15,0+0,1
			600	217,5-220,5			900	15,1
				PLE			800	15,1+0,1
				106,0-114,0			725	15,2+0,1
			300				600	max. 14,5
							500	13,7+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

①

Test Specifications Fuel Injection Pumps ① and Governors

40

VDT-WPP 001/4 MAC 11,0 u 1

1. Edition

En

PES 6 P 110 A 720/3 RS 6002 US-RQV 300/400-900 PA 575 K
Komb.-Nr. 9 400 231 079 PLE-Maß = 0,740" - 0,820"

supersedes -

company: MACK

engine: E 6 - 315 R

315 PS

Note VDT-I-MAC 002!

Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

2,4-2,5
(2,35-2,55)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	14,7+0,1	23,2-23,4	0,4			
300	5,1-5,3	1,3-2,3	0,4			

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1020	15,2-17,8	-	-	-	ca. 19	250	9,4-10,8	-	-
ca. 61	13,7 4,0 1130	940-950 1070-1100 0 - 1,0				3a	300 400 530-590 = 2,0	7,9-8,1 3,3-4,7 = 2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control ⑤ travel Control rod travel	
rev/min	cm³/1000 strokes	rev/min ④a	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	9
900	232,0-234,0	940-950 *	725	244,0-247,0	100	110,0-170,0	900	14,6
			650	226,5-229,5			800	14,9+0,1
				PLE			725	14,9+0,1
			300	87,5-95,5			650	14,3+0,1
							500	13,2+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.83

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①

Test Specifications Fuel Injection Pumps ① and Governors

40

VDT-WPP 001/4 MAC 11,0 o 1

1. Edition

En

PES 6 P 110 A 720/3 RS 3064 US-RQV 300/600-1050 PA 532 K
Komb.-Nr. 9 400 231 055 PLE-Maß = 0,740" - 0,820 "

supersedes -
company: MACK
engine: ETZ 675 (235 PS)

Note VDT-I-MAC 002!

Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

3,5-3,6
Port closing at prestroke (3,45-3,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,7+0,1	17,2-17,4	0,4			
300	5,5-5,7	1,1-2,1	0,4			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1120	15,2-17,8	-	-	-	ca.20	250	9,8-11,3	-	-
ca. 62,5	11,7	1090-1100					300	7,9-8,1		
	4,0	1185-1215					400	3,8-5,2		
	1260	0-1,0					690-750=	2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1000	172,0-174,0	1090-1100*	800	178,5-181,5	100	110,0-170,0	1050	12,7+0,1
			600	197,5-200,5			1000	12,7
			300	113,0-121,0			800	13,1+0,1
				PLE			700	13,4+0,1
							600	13,9+0,1
							500	13,5+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.83

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Testoil-ISO 4113

043

B13

①

Test Specifications Fuel Injection Pumps ① and Governors

40

VDT-WPP 001/4 MAC 11,0 t 1

1. Edition

En

US-PES 6 P 110 A 720 RS 6004-1 US-RQV 300/600-1050 PA544-2K
Komb.-Nr. 9 400 231 145

supersedes
company
engine

-
MAC
E 6 - 200 (200 PS)

Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $3,2-3,3$ mm (from BDC)
(3,15-3,35)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	10,0+0,1	12,6 - 12,8	0,4			
300	5,0-5,2	1,1 - 2,1	0,4			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1125	15,2-17,8	-	-	-	ca. 21	250	8,0-10,0	-	-
ca. 60	9,0 4,0 1215	1090-1100 1155-1185 0 - 1,0				3a	300 400 700-760	7,9-8,1 3,8-5,2 = 2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed		Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	
1000	126,0-128,0	1090-1100 *	750	121,0-124,0	100	110,0-170,0	1050	9,9+0,1	
			650	120,5-123,5			1000	10,0	
							900	9,9+0,1	
							750	9,8+0,1	
							650	9,6+0,1	
							500	9,1+0,1	

Checking values in brackets

* 1 mm less control rod travel than col. 2

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Testoil-ISO 4113

①

Test Specifications Fuel Injection Pumps ① and Governors

40

VDT-WPP 001/4 MAC 11,0 m

1. Edition

En

PES 6 P 110 A 720/3 RS 3045
Komb.-Nr. 0 402 036 723

RQV 300/600-1050 PA 405 KR
PLE-Maß = 0,740" - 0,820"

supersedes

company:

engine:

-

MACK

ETY 675 DOM

Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{3,2-3,3}{(3,15-3,35)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,6+0,1	15,4-15,6	0,4			
300	5,5-5,7	1,0 - 2,0	0,4			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1050	16,2-17,8	-	-	-	ca. 18,5	250	9,8-11,3	300	0,9-2,0
ca. 63	11,6 4,0	1090-1100 1170-1200					300 400	7,9-8,1 3,8-5,2	380- 570	3,1-3,6
	1250	0 - 1,0				③a	550-710=2,0		810 1050	4,7-5,4 7,8

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1000	153,5-155,5	1090-1100 *	800	168,0-171,0	100	110,0-170,0	1000	12,6+0,1
			600	191,0-194,0			300	13,1+0,1
				PLE			700	13,7
			300	105,0-113,0			600	14,3+0,1
							500	14,2+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.83

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Testoil-ISO 4113

Test Specifications Fuel Injection Pumps ① and Governors

PES 6 P 110 A 720/3 RS 356 RQV 300/600-1050 PA 420 KR
Komb.-Nr. 0 402 036 040

supersedes

company:

engine:

- MACK

ET 673 E DOM

Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,8-2,9}{(2,75-2,95)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	10,8±0,1	12,3 - 12,5	0,4			
300	6,0-6,2	0,7 - 1,7	0,4			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1050	16,2-17,8	-	-	-	ca. 18,5	250	9,8-11,3	300	0,9-2,0
ca. 61,5	9,8 4,0 1250	1090-1100 1160-1190 0 - 1,0					300 400 670-730 = 2,0	7,9-8,0 3,6-5,0 = 2,0	380- 570 810 1050	3,1-3,6 4,7-5,4 7,8

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1000	123,0-125,0	1090-1100 *	750 660	128,5-131,5 109,5-112,5	100	110,0-170,0	1000 750 700 600 500	10,8 10,6±0,1 10,3±0,1 9,7±0,1 9,3±0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

①

Test Specifications Fuel Injection Pumps ① and Governors

40

VDT-WPP 001/4 MAC 11,0 m 1

1. Edition

En

PES 6 P 110 A 720/3 RS 3045 RQV 300/600-1050 PA 433 KR
Komb.-Nr. 9 400 231 015

supersedes -

company:

MACK

engine:

ETY 673 E
200 PS

Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{3,2-3,3}
(3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,0±0,1	13,0 - 13,2	0,4			
300	5,5-5,7	1,0 - 2,0	0,4			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1050	16,2-17,8	-	-	-	ca. 18,5	250	9,8-11,3	-	-
ca. 62	11,0 4,0 1250	1090-1100 1160-1190 0 - 1,0					300 400 670-730=2,0	7,9-8,1 3,8-5,2		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery idle switching point		Torque-control travel	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1000	130,0-132,0	1090-1100 *	750	133,5-136,5	100	110,0-170,0	1050	12,0±0,1
			600	123,5-126,5			1000	12,0±0,1
							800	12,2±0,1
							750	12,2±0,1
							600	11,2±0,1
							500	11,2±0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

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①

Test Specifications Fuel Injection Pumps ① and Governors

40

VDT-WPP 001/4 MAC 10,8 a 1

1. Edition

En

PES 6 P 110 A 720/3 RS 357 RQV 275-1050 PA 380 KR

Komb.-Nr. 0 402 036 032

supersedes

company:

MACK

Note VDT-I-MAC 002!

Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

END 711

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,8-2,9}{(2,75-2,95)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	10,6+0,1	12,1-12,3	0,4			
275	5,0-5,2	0,8-1,8	0,4			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1050	15,0-17,8	-	-	-	ca. 10	150	7,2-8,0	250	0,7-1,3
	1100	9,8-14,0					200	6,0-8,0	520	2,6-3,2
	1150	4,0-9,6					300	3,2-4,4	780	4,6-5,1
	1180	0 -7,0					400	2,4-3,6	1050	8,2
	1260	0					600	0 -1,2		
							680	0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b)	Fuel delivery characteristics (5a) high idle speed (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5) Control rod travel mm	
rev/min	cm ³ /1000 strokes	rev/min (4a)	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	
1	2	3	4	5	6	7	8	9
1000	119,5-121,5	1090-1100*	700	129,5-132,5	100	146,0-166,0 = ca.21,0 mm RW	1000 900 700 500	10,6 10,6 10,4 10,2

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.83

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B18

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①

Test Specifications Fuel Injection Pumps ① and Governors

40

VDT-WPP 001/4 MAC 11,0 h

1. Edition

En

PES 6 P 110 A 720/3 RS 356 RQV 300/600-1050 PA 368 KR
Komb.-Nr. 0 402 036 026

supersedes

company

engine

MACK

ET 673 EXP.

Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,8-2,9}{(2,75-2,95)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,5+0,1	17,8-18,0	0,4			
300	6,0-6,2	0,7 - 1,7	0,6			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1050	16,2-17,8	-	-	-	ca. 18,5	250	9,8-11,3	300	0,9-2,0
ca. 63	11,5 4,0 1280	1090-1100 1175-1205 0 - 1,0					300 400 650-710	7,9-8,1 3,8-5,2 =2,0	380- 570 810 1050	3,1-3,6 4,7-5,4 7,8

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics (5a) high idle speed (5b)		Starting fuel delivery idle switching point (6)	Torque-control travel (5)		
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1000	177,5-179,5	1090-1100 *	750	170,5-173,5	100	110,0-170,0 = ca. 21,0 mm RW	1050	12,5+0,1
			600	153,0-156,0			600	11,8+0,1
							500	11,2+0,1
							750	12,6+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.83

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Testoil-ISO 4113

①

Test Specifications Fuel Injection Pumps ① and Governors

40

VDT-WPP 001/4 MAC 11,0 i 5

1. Edition

En

PES 6 P 110 A 720/3 RS 3036
Komb.-Nr. 9 400 231 023

RQV 300/450-950 PA 448 KR
PLE-Maß = 0,740" - 0,820"

supersedes

company

engine

-

MACK
ETAZ 673 A
315 PS

Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,4-2,5 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	15,1+0,1	23,4-23,6	0,4			
300	5,0-5,2	1,3-2,3	0,4			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	970	16,2-17,8	-	-	-	ca. 18,5	300	7,9-8,1	-	-
ca. 63	14,1 4,0 1200	990-1000 1115-1145 0 - 1,0					250 400 575-635= 2,0	9,8-11,3 3,8-5,2		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b)	Fuel delivery characteristics high idle speed (5b)		Starting fuel delivery Idle switching point (6)		Torque-control travel Control rod travel (5)	
rev/min	cm ³ /1000 strokes	rev/min (4a)	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
900	234,0-236,0	990-1000 *	725 600 300	241,5-244,5 219,5-222,5 PLE 108,0-116,0	100	110,0-170,0	950 900 800 725 600 500	15,0 15,1 15,1 15,2 max. 14,5 13,9

Checking values in brackets

* 1 mm less control rod travel than col. 2

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3.83

B20

B20

Test Specifications Fuel Injection Pumps ① and Governors

En

PES 6 P 110 A 720/3 RS 3036
Komb.-Nr. 0 402 036 709

RQV 300/600-1050 PA 364 KR
PLE-Maß = 0,740" - 0,820"

supersedes

company:

engine

MACK

ETA 676

Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,8-2,9}{(2,75-2,95)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	13,8 +0,1	21,0-21,2	0,4			
300	5,0-5,2	1,2 - 2,2	0,4			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1070	16,2-17,8				ca. 19	250	9,8-11,5	300	0,4-1,0
ca. 63	12,8	1090-1100					300	7,2-9,0	400	1,0-1,6
	4,0	1190-1220					400	2,2-5,0	600	2,5-3,1
	1280	0 - 1,0					800	0 - 0,8	1130	8,5

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) rev/min 1		Rotational speed limitation intermediate speed rev/min 3		Fuel delivery characteristics high idle speed rev/min 4		Starting fuel delivery idle switching point rev/min 6		Torque-control travel Control rod travel mm 8	
cm ³ /1000 strokes 2	cm ³ /1000 strokes 5	cm ³ /1000 strokes 4a	cm ³ /1000 strokes 5a	cm ³ /1000 strokes 6	cm ³ /1000 strokes 7	cm ³ /1000 strokes 9	cm ³ /1000 strokes 10	mm 11	mm 12
1000	210,5-212,5	1090-1100 *	800	210,5-213,5	100	11,5 mm RW			
			600	228,0-231,0	300	17,0-23,0			
				PLE	1155	55,0-61,0			
					300	111,0-119,0			

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 10,8 b 1

1. Edition

En

PES 6 P 110 A 720/3 RS 357 RQV 300/600-1050 PA 441 KR

Komb.-Nr. 9 400 231 017

supersedes

company

MACK

ENDT 675 DOM

Note VDT-I-MAC 002!

Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,8-2,9$
($2,75-2,95$) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,1+0,1	14,8 - 15,0	0,4			
300	5,0-5,2	0,7 - 1,7	0,4			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1050	16,2-17,8	-	-	-	ca. 18	250 300	9,8-11,3 7,9-8,1	300 380 570	0,9-2,0 3,1-3,6
ca. 63	11,1 4,0 1230	1090-1100 1160-1190 0 - 1,0				3a	400 650-710	3,8-5,2 2,0	810 1050	4,7-5,4 7,8

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1000	147,5-149,5	1090-1100*	800 600	165,5-168,5 181,5-184,5	100	110,0-170,0	1000 800 600 500	12,1 12,5+0,1 13,4+0,1 max. 13,2

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 11,0 m 3

1. Edition

En

PES 6 P 110 A 720/3 RS 3045 US-RQV 300/600-1050 PA 457 KR
Komb.-Nr. 9 400 231 031

supersedes -

company MACK

engine ETZ 673 E

200 PS

Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2-3,3
(3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	11,8±0,1	13,2-13,4	0,4			
300	5,9-6,1	1,1 - 2,1	0,4			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1050	16,2-17,8	-	-	-	ca. 18,5	250	9,8-11,3	-	-
ca. 62	10,8 4,0 1225	1090-1100* 1160-1190 0 - 1,0				3a	300 400 670-730 = 2,0	7,9-8,1 3,8-5,2 = 2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b)	Fuel delivery characteristics high idle speed (5a)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm ³ /1000 strokes	rev/min (4a)	rev/min	cm ³ /1000 strokes (5b)	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1000	131,5-133,5	1090-1100 *	750	128,5-131,5	100	110,0-170,0	1050	11,8±0,1
			600	122,0-125,0			1000	11,8
							900	11,8±0,1
							750	11,9±0,1
							600	11,5±0,1
							500	11,0±0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 11,0 t

1. Edition

En

US-PES 6 P 110 A 720/3 RS 6004 US-RQV 300/600-1050 PA 544K
Komb-Nr. 9 400 231 063

supersedes

company.

engine

- MACK

E 6 - 200

200 PS

Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	10,0±0,1	12,6 - 12,8	0,4			
300	5,0-5,2	0,8 - 1,8	0,4			

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1120	15,2-17,8	-	-	-	ca. 21	250 300	8,0-10,0 7,9- 8,1	-	-
ca. 60	9,0 4,0 1215	1090-1100 1160-1190 0 - 1,0				3a	400 700-760	3,8-5,2 =2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2		Rotational-speed limitation intermediate speed 2b	Fuel delivery characteristics high idle speed 5b		Starting fuel delivery idle switching point 6		Torque-control travel 5	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1000	126,0-128,0	1090-1100 *	750 650	122,0-125,0 121,0-124,0	100	110,0-170,0	1050 1000 900 750 650 500	9,9±0,1 10,0 9,9±0,1 9,8±0,1 9,6±0,1 9,1±0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 11,0 o

1. Edition

En

PES 6 P 110 A 720/3 RS 3064 RQV 300/600-1050 PA 461 K

Komb.-Nr. 0 402 036 725

PLE-Maß = 0,740" - 0,820"

supersedes -

company

MACK

Note VDT-I-MAC 002!

engine

ETZ 675

Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

235 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{3,5-3,6}
(3,45-3,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,7+0,1	17,2 - 17,4	0,4			
300	5,5-5,7	1,1 - 2,1	0,4			

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1050	16,2-17,8	-	-	-	ca. 18,5	250	9,8-11,3	-	-
ca. 63	11,7 4,0 1260	1090-1100 1175-1205 0 - 1,0				3a	300 400 670-730	7,9-8,1 3,8-5,2 =2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ②		Rotational speed limitation intermediate speed ④a	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1000	172,0-174,0	1090-1100 *	800	178,5-181,5	100	110,0-170,0	1050	12,7+0,1
			600	197,5-200,5			1000	12,7
			PLE				900	12,8+0,1
			300	173,0-121,0			700	13,4+0,1
							600	13,9+0,1
							500	13,5+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.83

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①

Test Specifications Fuel Injection Pumps ① and Governors

40

VDT-WPP 001/4 MAC 11,0 v 2

1. Edition

En

US-PES 6 P 110 A 720 RS 6006

US-RQV 300/600-950 PA621-5K

supersedes

Komb.-Nr. 9 400 231 167

PLE-Maß = 0,740" - 0,820"

company:

MACK

Note VDT-I-MAC 002!

Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

engine

EME 6 - 300 R
300 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (3.15-3.35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
950	14,0+0,1	20,9-21,1	0,4			
300	5,8-6,0	2,0 - 3,0	0,4			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1020	15,2-17,8	-	-	-	ca. 20	250	9,8-11,3	-	-
ca. 62	13,0 4,0 1155	990-1000 1100-1130 0 - 1,0					300 400 590-650	7,9-8,1 3,3-4,7 =2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ④a	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
950	209,0-211,0	990 - 1000*	850	210,0-213,0	100	120,0-180,0	950	14,0
			630	236,5-239,5			850	14,1+0,1
			750	14,6+0,1			750	14,6+0,1
			630	15,2+0,1			630	15,2+0,1
			500	14,7+0,1			500	14,7+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.83

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①

Test Specifications Fuel Injection Pumps ① and Governors

40

VDT-WPP 001/4 MAC 11,0 i 6

1. Edition

En

PES 6 P 110 A 720/3 RS 3036

US-RQV 300/450-950 PA 513 K

supersedes

-

Komb.-Nr. 9 400 231 047

PLE-Maß = 0,740" - 0,820"

company

MACK

Note VDT-I-MAC 002!

engine

ETAZ 673 A

Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

315 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,4-2,5 mm (from BDC)
(2,35-2,55)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	15,1+0,1	23,1-23,3	0,4			
300	5,0-5,2	1,3-2,3	0,4			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	970	16,2-17,8	-	-	-	ca. 20,5	250	10,1-10,5	-	-
ca. 62,5	14,1 4,0 1210	990-1000 125-1155 0 - 1,0						300 7,9-8,1 400 4,9-5,3 605-665=2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min	cm ³ /1000 strokes	rev/min ④a	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 900	0,7 bar 231,0-233,0	990-1000 *	LDA 725 LDA 600 PLE 300	0,7 bar 240,5-243,5 0,7 bar 219,0-222,0 103,0-111,0	100	110,0-170,0	950 900 725 700 600 500	15,0+0,1 15,1 15,2+0,1 15,1+0,1 max. 14,5 13,6+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

BOSCH

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3.83

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 900 rev/min decreasing pressure - in bar gauge pressure
increasing

MAC 11,0 i 6 -2-

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PES6P..RS3036 +US-RQV..PA 513 K	0,36	0,53	13,8 - 13,9 14,8 - 15,0

Notes:

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 10,8 c

1. Edition

En

PES 6 P 110 A 720/3 RS RQV 300/600-1050 PA 399 KR

Komb.-Nr. 0 402 036 038 PLE-Maß = 0,740"-0,820"

Note VDT-I-MAC 002!

Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

supersedes

company

MACK

ENDT 675 EXP

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke		2,8-2,9 (2,75-2,95)		mm (from BDC)		
Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm
1	2	3	4	2	3	6
1000	12,1+0,1	15,0 - 15,2	0,4			
300	5,0-5,2	0,8 - 1,8	0,4			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1050	16,2-17,8	-	-	-	ca.18,5	250	9,8-11,3	300	0,9-2,0
ca.63	11,1	1090-1100					300	7,9-8,1	380-	
	4,0	1160-1190					400	3,8-5,2	570	3,1-3,6
	1230	0 - 1,0					650-710	=2,0	810	4,7-5,4
									1050	7,8

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery		Rotational-speed		Fuel delivery characteristics		Starting fuel delivery		Torque-control	
Control-rod stop		limitation		high idle speed		idle switching point		travel	
Test oil temp. 40°C (104°F)		intermediate speed							
rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	
LDA 1000	0,7 bar 150,0-152,0	1090-1100*	LDA 600	0,7 bar 184,0-187,0	100	110,0-170,0	1050	12,1+0,1	
LDA 800	0,7 bar 167,5-170,5		LDA 1000	0 bar			1000	12,1	
				134,5-137,5			900	12,3+0,1	
				PLE			800	12,6+0,1	
				115,0-123,0			700	13,1+0,1	
							600	13,4+0,1	
							500	max. 13,2	

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure increasing

MAC 10,8 c

-2-

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PES 6 P..RS 357 + RQV..PA 399 KR	0,36	0,49	11,5 - 11,6 11,9 - 12,1

Notes:

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 11,0 1

1. Edition

En

PES 6 P 110 A 720/3 RS 3036 RQV 300/600-1050 PA 398 KR
Komb.-Nr. 0 402 036 721 PLE-Maß = 0,740" - 0,820"

supersedes

company

engine

MACK

ETA 676 EXP

Note VDT-I-MAC 002!

Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9
(2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	13,9+0,1	21,1-21,3	0,4			
300	5,0-5,2	1,2-2,2	0,4			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1070	16,2-17,8	-	-	-	ca. 18,5	250	9,8-11,3	300	0,6-1,8
ca. 63	12,9	1090-1100					300	7,9-8,1	390-580	3,1-3,6
	4,0	1190-1220					400	3,8-5,2	820	4,9-5,4
	1280	0 - 1,0					680-740=2,0		1050	7,9

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2		Rotational-speed limitation intermediate speed 4a	Fuel delivery characteristics high idle speed 5b		Starting fuel delivery idle switching point 6		Torque-control travel 5	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1000	0,7 bar 210,5-212,5	1090-1100*	LDA 600	0,7 bar 228,0-231,0	100	110,0-170,0 = ca. 11,5 mm RW	1050	13,8+0,1
LDA 800	0,7 bar 210,5-213,5		LDA 1000	0 bar 187,0-190,0			1000	13,8
			PLE				900	13,8+0,1
			300	128,5-136,5			800	14,1+0,1
							600	14,8+0,1
							500	14,4+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 300 rev/min decreasing pressure - in bar gauge pressure
increasing

MAC 11,0 I -2-

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES6P..R 3036 + RQV..PA 398 KR	0,36	0,49	13,1 - 13,2 13,5 - 13,7

Notes:

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

40

VDT-WPP 001/4 MAC 11,0 q

1. Edition

En

PES 6 P 110 A 720/3 RS 6002

US-RQV 300/600-1050 PA 485 K

supersedes -

Komb.-Nr. 9 400 231 041

PLE-Maß = 0,740" - 0,820"

company:

MACK

Note VDT-I-MAC 002!

engine

EM 6-285

Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

285 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

2,8-2,9
(2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,9+0,1	21,3 - 21,5	0,4			
300	5,4-5,6	1,8 - 2,8	0,4			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1120	15,2-17,8	-	-	-	ca. 20	250	9,8-11,3	-	-
ca. 62	11,9 4,0 1240	1090-1100 1185-1215 0 - 1,0				3a	300 400 690-750 = 2,0	7,9-8,1 3,8-5,2		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) rev/min 1		Rotational-speed limitation intermediate speed rev/min 3		Fuel delivery characteristics high idle speed rev/min 5		Starting fuel delivery idle switching point rev/min 7		Torque-control travel rev/min 8	
cm ³ /1000 strokes 2	cm ³ /1000 strokes 4	cm ³ /1000 strokes 6	cm ³ /1000 strokes 8	cm ³ /1000 strokes 10	cm ³ /1000 strokes 12	cm ³ /1000 strokes 14	cm ³ /1000 strokes 16	Control rod travel mm 9	Control rod travel mm 11
1000	212,5-214,5	1090-1100 *	800	216,0-219,0	100	110,0-170,0	1050	12,8+0,1	12,9
			600	243,5-246,5			800	13,3+0,1	
			800	147,0-155,0			700	14,0+0,1	
							600	14,3+0,1	
							500	14,3+0,1	

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

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3.83

C9

C3

①

Test Specifications Fuel Injection Pumps ① and Governors

40

VDT-WPP 001/4 MAC 11,0 k 4

1. Edition

En

PES 6 P 110 A 720/3 RS 3036

US-RQV 300/600-1050 PA 462 K

supersedes

Komb.-Nr. 9 400 231 033

PLE-Maß = 0,740" - 0,820"

company:

MACK

Note VDT-I-MAC 002!

Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

engine

ETA 676 B

306 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,4-2,5 mm (from BDC)
(2,35-2,55)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	14,6±0,1	22,5-22,7	0,4			
300	5,3-5,5	1,3-2,3	0,4			

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1070	16,2-17,8	-	-	-	ca. 18,5	250	9,8-11,3	-	-
ca. 63	13,6 4,0 1270	1090-1100 1190-1220 0 - 1,0				③a	300 400 680-740 = 2,0	7,9-8,1 3,8-5,2 = 2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed ②b intermediate speed ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1000	226,0-228,0	1090-1100*	800	227,0-230,0	100	110,0-170,0	1050 1000 800 700 600 500	14,6±0,1 14,6 14,7±0,1 14,8±0,1 15,3±0,1 15,0±0,1
			600	240,5-243,5				
			300	PLE 116,0-124,0				

Checking values in brackets

* 1 mm less control rod travel than col. 2

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3.83

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MB 14,6 g 1

4. Edition

PE 8 P 120 A 320 LS 3807

RQ 300/1150 PA 511-2

supersedes 10.82
Daimler-Benz
company: OM 422 LA
engine: 276 kW (375 PS)

1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je 45° ±0,5° (±0,75°)

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

(3,95-4,15)

Zyl. 8

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	11,6+0,1	18,9 - 19,1	0,5(0,9)			
300	4,8-5,0	1,2 - 2,0	0,8(1,2)			
1150	11,6+0,1	C, Sp.1u. 2	0,75			
600	11,6+0,1	C, Sp.4u. 5	0,75			
500	10,1+0,1					

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
Setting point		Test specifications		Setting point		Test specifications		Setting point		Test specifications	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	19,1 - 20,8	600	19,9	10,6 4,0	1195-1210 1250-1280	300	4,3	100 300 335-375	min.6,0 4,2-4,4 =2,0	-	-

Torque-control travel
on flyweight assembly dimension a =

mm

Speed regulation: At

1195 - 1210 min⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 3a	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes/mm 7
LDA 900	0,7 bar 189,0 - 191,0 (186,0 - 194,0)	-	-	LDA 600	0,7 bar 182,0 - 186,0 (179,0 - 189,0)	100	140,0 - 160,0
LDA 1150	0,7 bar 185,0-189,0 (182,0-192,0)	-	-	LDA 500	0 bar 139,0-141,0 (136,0-144,0)		

Checking values in brackets

1.83

D. Adjustment Test for Manifold Pressure Compensator

Test at $n = 500$ rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE 8 P..LS 3807 + RQ..PA 511-2	0,44		11,1 - 11,3
		0,70	11,6 - 11,7
		0	10,1 - 10,2
		0,34	10,5 - 10,7

Notes:

(1) when $n =$

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 12,0 f1
2. Edition

En

PE 6 P 120 A 320 RS 3071

RQV 250-1025 PA 371

supersedes 2.81

company: Volvo

engine: TD 120 GA

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke ^{2,6-2,7}
(2,55-2,75) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,4+0,1	20,5-20,8	0,5(0,9)			
250	5,6-5,7	2,2-2,6	0,5(0,7)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1100	15,2-17,8	-	-	-	ca.12	100	min.7,1	250	1,1-1,2
ca.40	10,4	1065-1075					250	5,6-5,7	500	2,9-3,3
	4,0	1145-1175							800	5,1-5,4
	1300	0 - 1,0							1025	7,2

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery Idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 700	0,9 bar 205,0-208,0 (202,0-211,0)	1065-1075*	LDA 700	0 bar 157,0-161,0 (154,0-164,0)	100	230,0-270,0 =RW 20,0- 21,0 mm	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE 6 P..RS 3071 +RQV.. PA 371	0,57	0,90 0 0,33	11,0-11,1 11,4-11,5 9,0-9,1 9,9-10,1

Notes:

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 12,0 a
4. Edition

En

Testoil-ISO 4113

PES 6 P 120 A 320 RS 3070 RQV 250-1100 PA 495

supersedes 8.81

company: RVI

engine: MIDR 063540
223 kW (304 PS)

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $(3,45-3,65)$ mm (from BDC) \approx RW 9,0 - 12,0 mm
3,50-3,60

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,9-13,0	19,4 - 19,7	0,5(0,8)			
250	5,2-5,4	1,5 - 2,3	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1100 1400	15,2-17,8 0 - 1	-	-	-	ca. 12	100 250	min. 6,8 5,2-5,4	200 500 850 1150	0,3-0,6 3,0-3,2 5,0-5,2 8,4
ca. 66	11,9 4,0	1160-1170 1235-1265				290-400 3a				

Torque control travel \approx mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed limitation intermediate speed ②b	Fuel delivery characteristics high idle speed ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1100	0,7 bar 194,0-197,0 (191,0-200,0)	1160-1170	LDA 1100	0 bar 151,0-154,0 (148,0-157,0)	100	130,0-165,0		
					100-170 (80-190)			

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.83

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES 6 P..RS 3070 + RQV..PA 495	0,27	0,70 0 0,22	12,2 - 12,3 12,9 - 13,0 10,6 - 10,7 11,2 - 11,4

Notes:

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 SAU 12,0 e

1. Edition

En

PES 6 P 120 A 420 RS 3063, Z RQ 200-1100 PA 279-1

supersedes =

company: Saurer

engine: D 3 KTUB

155 kW (211 PS)

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke (3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	9,0-9,1	13,4-13,8	0,5(0,8)			
250	5,6-5,8	1,3-1,9	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3				Idle speed regulation Setting point rev/min 7				Torque control rev/min 11	
Control rod travel mm 2		Control rod travel mm 4	Control rod travel mm 5	Test specifications rev/min 6		Control rod travel mm 8	Control rod travel mm 9	Control rod travel mm 10		Control rod travel mm 12	
550	15,6-16,4	550	16,0	8,0 4,0 1350	1145-1160 1180-1210 0-1,0	250	5,7	100 250 340-380=2,0	min. 7,1 5,6-5,8 2,0	1100 910 860 550	9,0-9,1 9,1-9,3 9,2-9,6 9,5-9,6

Torque-control travel
on flyweight assembly dimension a =

0,3 mm

Speed regulation: At

1145-1160 min⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3	Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	Control rod travel cm ³ /1000 strokes/mm 7
cm ³ /1000 strokes 2			cm ³ /1000 strokes 5			
LDA 1100	0,7 bar 134,0-138,0 (131,0-141,0)	-	LDA 700	0,7 bar 143,0-147,0 (140,0-150,0)	100	210,0-240,0
			LDA 400	0 bar 89,0-93,0 (86,0-96,0)		

Checking values in brackets

D. Adjustment Test for Manifold Pressure Compensator

-2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

SAU 12,0 e

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 6 P..RS3063,Z +RQ..PA 279-1	0,26	0,70 0 0,11	9,3-9,4 9,5-9,6 8,3-8,4 8,6-8,8

Notes:

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 DAF 11,6 o 1
3. Edition

En

Testoil-ISO 4113

PE 6 P 120 A 320 RS 415

RSV 250-900P5/475

supersedes 8.81
company: DAF
engine: DKS-1160 E1160
206 kW (280 PS)

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,85-3,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
650	11,9-12,0	18,4 - 18,7	0,5 (0,9)			
250	6,7-6,9	1,9 - 2,3	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800 0,3-1,0 x = 5,75					ca. 24	250	6,3	900	11,4-11,6
ca. 46	940-950 = 10,5						250	6,7-6,9	650	12,1-12,2
2a	1025-1055=4,0 1200=0,3-1,7						395-455	= 2,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104°F)		Note: changed to ... rev/min				Idle		Control rod travel mm	
rev/min 1	cm ³ /1000 strokes 2	3	4	cm ³ /1000 strokes 5	6	rev/min 7	cm ³ /1000 strokes 8	rev/min 8	mm 9
LDA	0,7 bar	940-950 *	LDA	0,7 bar	100	310 - 350		250	6,7
650	184,0 - 187,0 (181,0 - 190,0)		900	181,0-186,0 (178,0-189,0)			= 19,5 - 21,0 mm RW		
			LDA 600	0 bar 129,0 - 132,0 (126,0 - 135,0)					

Checking values in brackets

* 1 mm less control rod travel than col 2

12.82

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C19

C19

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 600 rev/min decreasing pressure - in bar gauge pressure
 increasing
 XXXXX

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE 6 P..RS 415 m. RSV..P5/475	0,7	0,26 0,12 0	11,9-12,0 11,4-11,5 10,0-10,6 9,8-9,9

Notes:

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 DAF 11,6 03

1. Edition

En

PE 6 P 120 A 320 RS 415-1 RSV 250-900 P 5/475

supersedes

company

engine

DAF

DKS-E 1160

206 kW (280 PS)

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers.

A. Fuel Injection Pump Settings

Port closing at prestroke

(2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
650	11,9+0,1	18,4 - 18,7	0,5(0,9)			
250	6,7-6,9	1,9 - 2,3	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 24	250	6,3	650	12,1-12,2
	x	= 5,0					250	6,7-6,9	900	11,4-11,6
							395-455	= 2,0		
ca. 46	10,4	940-950								
2a	4,0	1025-1055								
	1200	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note changed to) rev/min				Idle			
rev/min 1	cm ³ /1000 strokes 2	3	4	5	6	7	8	9	
LDA 650	0,7 bar 184,0-187,0 (181,0-190,0)	940-950*	LDA 900	0,7 bar 181,0-186,0 (178,0-189,0)	100	310,0-350,0 = 19,5 - 21,0 mm RW	250	6,8	
			LDA 600	0 bar 129,0-132,0 (126,0-135,0)					

Checking values in brackets

* 1 mm less control rod travel than col 2

12.82

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Testoil-ISO 4113

C21

D. Adjustment Test for Manifold Pressure Compensator

Test at $n =$ 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE6P .. RS 415-1 + RSV .. P 5/475	0,27	0,70 0 0,12	11,4 - 11,5 11,9 - 12,0 9,8 - 9,9 10,0 - 10,6

Notes:

(1) when $n =$

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 BET 8,8 b

2. Edition

En

PE 6 P 120 A 320 RS 377 RQV 250-1200 PA 425 R

supersedes 2.82

company RVI

engine: MIDS 062 030
158 kW (215 PS)

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke		2.8-2.9 (2.75-2.95)	mm (from BDC) = RW 9.0 - 12.0 mm			
Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm
1	2	3	4	2	3	6
1200	12.7+0.1	15.2-15.5	0.4 (0.9)			
275	5.4-5.6	1.1-1.7	0.4 (1.2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1240	15.2-17.8	-	-	-	ca. 15	100	min. 7.0	200	0.3-0.6
ca. 56	11.7	1240-1250				280-380	275	5.4-5.6	530	2.9-3.1
	4.0	1320-1350							370	4.8-5.0
	1450	0 - 1.0							1200	8.0

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery		Rotational speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point	Torque-control travel	
Control-rod stop	Test oil temp. 40°C (104°F)		rev/min	cm ³ /1000 strokes		rev/min	Control rod travel
1	2	3	4	5	6	7	8
LDA	0.7 bar	1240-1250*	LDA	0 bar	100	19.5-21.0 mm RW	-
1200	152.0-155.0 (149.0-158.0)		350	51.0-55.0 (48.0-53.0)			-

Checking values in brackets

* 1 mm less control rod travel than col. 2
11.82

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D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE6P..RS377 + RQV..PA 425 R	0,20	0,70 0 0,16	12,3-12,4 12,7-12,8 11,1-11,2 11,5-11,7

Notes.

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MB 11,8F

En 4. Edition

Testoil-ISO 4113

 PE 6 P 110 A 720 RS 371 RQ 300/1100 PA 424 R
 Komb.-Nr. 0 401 846 398

 supersedes 10,82
 company: Daimler Benz
 engine: OM 355 A
 (207 kW) 280PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke $\frac{2,80-2,90}{(2,75-2,95)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,7+0,1	15,7 - 15,9	0,4(0,8)			
300	6,1-6,3	1,4 - 2,0	0,4(0,7)			

 Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3				Idle speed regulation Setting point rev/min 7				Torque control rev/min 11	
Control rod travel mm 2		Test specifications Control rod travel mm 4		Test specifications rev/min 6		Test specifications Control rod travel mm 8		Test specifications rev/min 9		Control rod travel mm 10	
650	19,2-20,8	650	20,0	10,7	1145-1160	300	6,2	100	min. 8,2	1100	11,7-11,8
VH = max. 46°				4,0	1195-1225			300	6,1-6,3	650	11,7-11,9
				1350	0 - 1,0			410-450	= 2,0		

 Torque-control travel
on flyweight assembly dimension a =

mm

Speed regulation: At

1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes/mm 7	
LDA 1100	0,7 bar 157,0 - 159,0 (154,0 - 162,0)			LDA 1100	0 bar 142,0 - 144,0 (139,0 - 147,0)	100	140,0 - 160,0
						100-220	(80-240)

Checking values in brackets

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
 increasing
 XXXXXX

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
371 + 424 R	0,70	0,39 0,35 0	11,7 - 11,8 11,5 - 11,6 11,2 - 11,3 11,0 - 11,1

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 14,6 1 1
2. Edition

En

PE8P120A320LS3807 RQV 300-1150PA526-2
1-8-7-2-6-3-5-4 ie $45^\circ \pm 0,5^\circ (\pm 0,75^\circ)$

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067.

superseded 82
company Daimler-Benz
OM 422 LA
engine: 276 kW (375PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke (3,95-4,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	11,6+0,1	18,9-19,1	0,5(0,9)			
300	4,8-5,0	1,2- 2,0	0,8(1,2)			
1150	11,6+0,1	C, Sp. 1 u. 2	0,75			
600	11,6+0,1	C, Sp. 4 u. 5	0,75			
500	10,1+0,1					

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca. 10	100 300	min. 6,0 4,2-4,4	250 550 850 1150	1,0-1,2 3,4-3,7 4,9-5,3 7,6
ca. 65	10,6 4,0 1350	1190-1200 1230-1260 0- 1,0				320-465				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) rev/min 1		Rotational speed (2b) limitation intermediate speed rev/min 3		Fuel delivery characteristics (5a) high idle speed (5b) rev/min 4		Starting fuel delivery Idle switching point rev/min 6		Torque-control (5) travel rev/min 8		Control rod travel mm 9
LDA 900	0,7 bar 189,0-191,0 (186,0-194,0)	1190-1200*		LDA 500	0,7 bar 182,0-186,0 (179,0-189,0)	100	140,0-160,0	-	-	
LDA 1150	0,7 bar 185,0-189,0 (182,0-192,0)			LDA 500	0 bar 139,0-141,0 (136,0-144,0)					

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.83

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D3

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE8P...LS3807 + .. PA526-2	0,44	0,70 0 0,34	11,1-11,3 11,6-11,7 10,1-10,2 10,5-10,7

Notes:

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 14,61

2. Edition

En

PE 8 P 120 A 320 LS 3807 RQV 300-1150 PA 526

supersedes 5.81

company Daimler-Benz

engine: OM 422 LA

276 kW (375 PS)

1-8-7-2-6-3-5-4 je 45° ±0,5° (±0,75°)

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke $4,0-4,1$ mm (from BDC) Zyl. 8
(3,95-4,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	11,6+0,1	18,9-19,1	0,5(0,9)			
300	4,8-5,0	1,2-2,0	0,8(1,2)			
1150/600	11,6+0,1	C, Sp. 2 u.5	0,75(1,2)			
500	10,1+0,1	C, Sp. 5	0,75			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	①a	Degree of deflection of control lever	rev/min Control rod travel mm	④	Degree of deflection of control lever	rev/min Control rod travel mm	③	rev/min mm
1	2	3	②a	4	5	6	7	8	9	10 11
max.	1150	15,2-17,8		-	-	-	ca.10	100	min.6,0	250 1,0-1,2
								300	4,2-4,4	550 3,4-3,7
ca.65	10,6 4,0 1350	1190-1200 1230-1260 0 - 1,0					320-465 ③a			850 4,9-5,3
										1150 7,6

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 900	0,7 bar 189,0-191,0 (186,0-194,0)	1190-1200*	LDA 600	0,7 bar 182,0-186,0 (179,0-189,0)	100	140,0-160,0		
LDA 1150	0,7 bar 185,0-189,0 (182,0-192,0)		LDA 500	0 bar 139,0-141,0 (136,0-144,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

2.83

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D5

D. Adjustment Test for Manifold Pressure Compensator

-2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

MB 14,6 1

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE 8 P..LS 3807 + ROV.. PA 526	0,44	0,70 0 0,34	11,1-11,3 11,6-11,7 10,1-10,2 10,5-10,7

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

① WPP 001/4 MAN 11,1 q 8
1. Edition

En

PES 6 P 120 A 720 LS 388 RQV 250-1100 PA 508

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

supersedes

MAN

company: D 2566 MKF

engine: 235 kW (320 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $3,0-3,1$ mm (from BDC) 7yl. 6 - RW 9,0-12,0 mm
(2,95-3,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	13,1+0,1	21,7-22,0	0,5(0,9)			
250	6,3-6,5	1,1-1,7	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1100	15,2-17,8	-	-	-	ca.15	100	min.7,9	200	0,6-0,8
ca.64	10,3	1140-1150					250	6,3-6,5	500	4,3-4,5
	4,0	1225-1255					400-460 = 2,0		800	5,9-6,1
	1400	0 - 1,0							1100	8,5

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed (2b) intermediate speed		Fuel delivery characteristics (5a) high idle speed (5b)		Starting fuel delivery idle switching point		Torque-control travel	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	cm ³ /1000 strokes 4	rev/min 5	cm ³ /1000 strokes 6	rev/min 7	cm ³ /1000 strokes 8	rev/min 9	Control rod travel mm 10
LDA 750	1,0 bar 217,0-220,0 (214,0-223,0)	1140-1150*	LDA 500	0,34 bar 145,0-150,0 (142,0-153,0)	100	205,0-225,0	1100	11,3+0,1	
LDA 1100	1,0 bar 180,0-185,0 (177,0-188,0)		LDA 500	0 bar 101,0-104,0 (98,0-107,0)			750	13,1+0,1	
							900	12,6+0,1	
							1000	11,8+0,2	

Checking values in brackets

* 1 mm less control rod travel than col. 2

11.82

Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 6 P..LS 388 + RQV.. PA 508	0,34	1,0 0 0,61	10,9-11,0 13,1-13,2 9,4-9,5 12,5-12,9

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP001/4MAN11,1 q 9

1. Edition

En

PES6P120A720LS388

RQV 250-1050 PA 508

supersedes

company MAN

engine: D2566 MK/319

235 kW (320 PS)

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke $3,0-3,1$ mm (from BDC) Zyl. 6 - RW 9,0 - 12,0 mm
(2,95-3,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	13,1+0,1	21,7-22,0	0,5(0,9)			
250	6,3-6,5	1,1-1,7	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1100	15,2-17,8	-	-	-	ca. 11	100 250	min. 7,1 6,3-6,5	200 480	
ca. 63	10,3 4,0 1300	1090-1100 1175-1205 0 - 1,0				③a	385-445 = 2,0		770 1050	

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed ②b limitation intermediate speed 4a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 750	1,0 bar 217,0-220,0 (214,0-223,0)	1090-1100*	LDA 500	0,34 bar 145,0-150,0 142,0-153,0)	100	205,0-225,0	1050 750 810 950	11,3+0, 13,1+0, 12,6+0, 11,6+0,8
LDA 1050	1,0 bar 180,0-185,0 (177,0-188,0)		LDA 500	0 bar 101,0-104,0 98,0-107,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES6P..LS388 +RQV..PA508	0,34	1,0 0 0,61	10,9-11,0 13,1-13,2 9,4- 9,5 12,5-12,9

Notes

(1) when n =

rev/min and
gauge pressure -

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 11,4 q

1. Edition

En

PES 6 P 120 A 820 LS 3112 RSV 350-1100 PQ/500

supersedes -

company Daimler-Benz

engine OM407A

206 kW (280 PS)

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $4,0 - 4,1$ mm (from BDC)
(3,95-4,15)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1100	11,5+0,1	17,5-17,7	0,5 (0,9)			
350	4,7-4,9	1,6-2,2	0,8 (1,2)			
600	11,8+0,1	C, Sp. 4 u. 5	0,75(1,2)			
500	10,5+0,1					

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca. 25	350	4,8	1100	11,5-11,6
	x = 3,25								750	11,7-11,9
							420-460	= 2,0	600	11,8-11,9
ca. 48	10,5	1135-1145								
2b	4,0	1215-1245								
	1300	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min							
rev/min	cm ³ /1000 strokes	3	rev/min	cm ³ /1000 strokes	5	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2		4			6	7	8	9
LDA 1100	0,7 bar 175,0-177,0 (172,0-180,0)	1135-1145*	LDA 600	0,7 bar 177,0-183,0 (174,0-186,0)		100	150,0-170,0	-	-
			LDA 500	0 bar 143,0-145,0 (140,0-148,0)					

Checking values in brackets

* 1 mm less control rod travel than col 2

1.83

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D11

241

D. Adjustment Test for Manifold Pressure Compensator

-2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

MB 11,4 q

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES6P..LS3112 + RSV..PO/500	0,70	0,40 0,50 0	11,8 - 11,9 10,7 - 10,9 11,6 - 11,7 10,5 - 10,6

Notes:

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ①A and Governors

40

WPP 001/4 MWM 1,5 c
5. Edition

En

PES 2 A 75 D..RS1235, 1252, 1298
3 80 ..RS1236, 1239, 1299
4 ..RS1237, 1246, 1276, 1301
6 ..RS1238, 1302

EP/RSV 300-1000 A7B505DR ^{supersedes}
company
EP/RSV 325-1500 A2B505DR ^{engine}

5.79
MWM
D 208 -
D 308 -
D 225 -
D 325 - 2..6
D 226 -
D 327 -

★★

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,2-2,3 mm (from BDC)
(2,15-2,35)

Rotational speed rev/min	Control rod travel mm	Fuel delivery "C" and "D" cm/100 strokes	Difference cm/100 strokes	Control rod travel mm	Fuel delivery "C" and "D" cm/100 strokes	Spring pre-tensioning (torque-control valves) mm
1	2	3	4	2	3	6
1000	12	6,2-6,6	0,4	9	4,1-4,5	
	9	3,2-3,7		6	1,2-2,0	
200	9	2,1-2,8		9	2,7-3,7	

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

300-1000

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.68	1000	16,0	without auxiliary spring			ca.28	300	5,5	-	-
	1050	8,5					100	19-21		
	1100	2,4					300	5,7-6,3		
ca.67	1030	8,0-9,0	with auxiliary spring				450	0 - 1		
②a	1070	2,0-4,0								
	1120	0,3-1,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full load stop		⑥ Rotational speed limiter		③a Fuel delivery characteristics		Starting fuel delivery ⑤		④a Idle stop	
Test oil temp 40 °C (104 °F)		Note changed to				Idle			
rev/min	cm/1000 strokes	rev/min		rev/min	cm/1000 strokes	rev/min	cm/1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
page	3 - 33!								
** As from FD 823 the idle auxiliary-spring has been changed from 1 424 641 000 to ... 001. New values enclosed.									

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.83

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B. Governor Settings

325-1500

MWM 1,5 c

-2-

① Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 58	1500 1580 1630	16,0 9,0 4,2	without auxiliary spring			ca. 16	325	7,0	-	-
ca. 56	1530 1580 1720	8,0-9,0 3,0-4,0 0,3-1,0					325 445-	7,4-7,6 505=2,0		
⑤			with auxiliary n spring							

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational speed limitation		③a Fuel delivery characteristics		Starting fuel delivery idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note changed to rev/min						Control rod travel mm	
rev/min	cm ³ /1000 strokes	3	4	5	6	7	8	9	10
1	2	3	4	5	6	7	8	9	10
page	3 - 33!								

Checking values in brackets

*1 mm less control rod travel than col. 2

The rating plate described on MWM 1.5 a has recently been modified to enable more precise adjustment on governors with torque control. The modification was carried out in columns n = engine speed and Q = (full-load quantity). Testing was extended to two speeds and two quantities.

Deviating from the instructions WPP 001/4, 1. Supplement "Adjustment of the governor and the pump", the following points now apply:

- (2) Adjustment as per rating plate n = 1 (1st speed) and Q = (1st quantity; or according to columns 1 and 2.
- (3) Adjustment is carried out until the control-rod travel changes, as read under (2), or (with the new rating plate) until the 2nd quantity is reached at the second speed; or as per columns 4 and 5.
- (6) Is to be adjusted as per rating plate n = (1st speed + 20 min⁻¹); or as per column 3.

In the case of repairs to Fendt tractors on which the new rating plate has not yet been attached (2nd speed and 2nd quantity), the full-load data applies, listed as per engine types; in accordance with the above instructions.

With new replacement pumps delivered from the Stuttgart warehouse, the spring retainer is not fitted! Order from MWM Co using the old rating plate.

Full-load data for Fendt tractors - Engine D 208/308

Only valid for engines with pumps

PES 3 A 75 C 320/3 RS 1236 and 39
PES 4 A 75 C 320/3 RS 1237

En

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

Fendt tractors - Output at speed - Engine and tractor type

32 PS / 2100 min⁻¹ - D 208 - 3 - Farmer 2 D -
1050 36,0 - 37,0 1070 700 39,0 - 41,0

32 PS / 1050 min⁻¹ - D 308 - 3 - 231 GT -
975 36,0 - 37,0 990 700 39,0 - 41,0

38 PS / 2600 min⁻¹ - D 208 - 3 - Farmer 2 -
1300 35,0 - 36,0 1320 700 36,0 - 38,0

55 PS / 2400 min⁻¹ - D 208 - 4 - Farmer 4 S -
1200 41,0 - 42,0 1220 700 42,0 - 44,0

General fitting - Output at speed

D 208 - 2
F 31 PS / 3000 min⁻¹
1500 41,5 - 43,5 1520

B 30 PS / 3000 min⁻¹
1500 39,5 - 41,5 1520

A 28 PS / 3000 min⁻¹
1500 41,5 - 43,5 1520

F 30 PS / 2800 min⁻¹
1400 41,5 - 43,5 1420

B 29 PS / 2800 min⁻¹
1400 40,0 - 42,0 1420

A 27 PS / 2800 min⁻¹
1400 41,5 - 43,5 1420

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

F 29 PS / 2600 min⁻¹

1300 43,0 - 45,0 1320

B 28 PS / 2600 min⁻¹

1300 41,0 - 43,0 1320

A 26 PS / 2600 min⁻¹

1300 42,5 - 44,5 1320

F 28 PS / 2500 min⁻¹

1250 42,5 - 44,5 1270

B 27 PS / 2500 min⁻¹

1250 40,5 - 42,5 1270

A 25 PS / 2500 min⁻¹

1250 41,5 - 43,5 1270

F 27 PS / 2400 min⁻¹

1200 42,0 - 44,0 1220

B 26 PS / 2400 min⁻¹

1200 40,0 - 42,0 1220

A 24 PS / 2400 min⁻¹

1200 41,0 - 43,0 1220

F 26 PS / 2300 min⁻¹

1150 41,5 - 43,5 1170

B 25 PS / 2300 min⁻¹

1150 39,5 - 41,5 1170

A 23 PS / 2300 min⁻¹

1150 40,5 - 42,5 1170

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm ³ /1000 strokes		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

F 25 PS / 2200 min⁻¹

1100 41,0 - 43,0 1120

B 24 PS / 2200 min⁻¹

1100 39,0 - 41,0 1120

A 22 PS / 2200 min⁻¹

1100 40,0 - 42,0 1120

F 24 PS / 2100 min⁻¹

1050 40,5 - 42,5 1060

B 23 PS / 2100 min⁻¹

1050 38,0 - 40,0 1060

A 21 PS / 2100 min⁻¹

1050 39,0 - 41,0 1060

F 23 PS / 2000 min⁻¹

1000 39,0 - 41,0 1010

B 22 PS / 2000 min⁻¹

1000 37,0 - 39,0 1010

A 20 PS / 2000 min⁻¹

1000 38,0 - 40,0 1010

B 20 PS / 1800 min⁻¹

900 36,0 - 38,0 910

A 18 PS / 1800 min⁻¹

900 36,5 - 38,5 910

B 16 PS / 1500 min⁻¹

750 34,0 - 36,0 760

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

A 15 PS / 1500 min⁻¹

750 36,0 - 38,0 760

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

F 46,5 PS / 3000 min⁻¹

1500 42,0 - 44,0 1520

B 45 PS / 3000 min⁻¹

1500 39,0 - 41,0 1520

A 42 PS / 3000 min⁻¹

1500 40,5 - 42,5 1520

F 45 PS / 2800 min⁻¹

1400 42,0 - 44,0 1420

B 43,5 PS / 2800 min⁻¹

1400 39,0 - 41,0 1420

A 40,5 PS / 2800 min⁻¹

1400 40,0 - 42,0 1420

F 43,5 PS / 2600 min⁻¹

1300 41,5 - 43,5 1320

B 42 PS / 2600 min⁻¹

1300 39,5 - 41,5 1320

A 39 PS / 2600 min⁻¹

1300 40,0 - 42,0 1320

F 42 PS / 2500 min⁻¹

1250 40,5 - 42,5 1270

B 40,5 PS / 2500 min⁻¹

1250 38,5 - 40,5 1270

A 37,5 PS / 2500 min⁻¹

1250 39,5 - 41,5 1270

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

F 40,5 PS / 2400 min⁻¹

1200 40,5 - 42,5 1220

B 39 PS / 2400 min⁻¹

1200 38,5 - 40,5 1220

A 36 PS / 2400 min⁻¹

1200 39,5 - 41,5 1220

F 39 PS / 2300 min⁻¹

1150 39,5 - 41,5 1170

B 37,5 PS / 2300 min⁻¹

1150 38,0 - 40,0 1170

A 34,5 PS / 2300 min⁻¹

1150 38,0 - 40,0 1170

F 37,5 PS / 2200 min⁻¹

1100 38,5 - 40,5 1120

B 36 PS / 2200 min⁻¹

1100 36,5 - 38,5 1120

A 33 PS / 2200 min⁻¹

1100 38,0 - 40,0 1120

F 36 PS / 2100 min⁻¹

1050 38,0 - 40,0 1060

B 34,5 PS / 2100 min⁻¹

1050 36,0 - 38,0 1060

A 31,5 PS / 2100 min⁻¹

1050 36,0 - 38,0 1060

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

F 34,5 PS / 2000 min⁻¹

1000 37,0 - 39,0 1010

B 33 PS / 2000 min⁻¹

1000 35,5 - 37,5 1010

A 30 PS / 2000 min⁻¹

1000 37,0 - 39,0 1010

B 30 PS / 1800 min⁻¹

900 34,0 - 36,0 910

A 27 PS / 1800 min⁻¹

900 35,0 - 37,0 910

B 24 PS / 1500 min⁻¹

750 33,0 - 35,0 760

A 22,5 PS / 1500 min⁻¹

750 36,0 - 38,0 760

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

F 62 PS / 3000 min⁻¹
1500 40,5 - 42,5 1520

B 60 PS / 3000 min⁻¹
1500 39,0 - 41,0 1520

A 56 PS / 3000 min⁻¹
1500 40,0 - 42,0 1520

F 60 PS / 2800 min⁻¹
1400 40,0 - 42,0 1420

B 58 PS / 2800 min⁻¹
1400 35,5 - 37,5 1420

A 54 PS / 2800 min⁻¹
1400 40,0 - 42,0 1420

F 58 PS / 2600 min⁻¹
1300 40,0 - 42,0 1320

B 56 PS / 2600 min⁻¹
1300 38,0 - 40,0 1320

A 52 PS / 2600 min⁻¹
1300 39,0 - 41,0 1320

F 56 PS / 2500 min⁻¹
1250 39,0 - 41,0 1270

B 54 PS / 2500 min⁻¹
1250 37,5 - 39,5 1270

A 50 PS / 2500 min⁻¹
1250 39,0 - 41,0 1270

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational speed limitation	Fuel delivery characteristics		Starting fuel delivery idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	9

F 54 PS / 2400 min⁻¹
1200 39,0 - 41,0 1220

B 52 PS / 2400 min⁻¹
1200 37,5 - 39,5 1220

A 48 PS / 2400 min⁻¹
1200 38,0 - 40,0 1220

F 52 PS / 2300 min⁻¹
1150 38,0 - 40,0 1170

B 50 PS / 2300 min⁻¹
1150 36,5 - 38,5 1170

A 46 PS / 2300 min⁻¹
1150 37,5 - 39,5 1170

F 50 PS / 2200 min⁻¹
1100 39,0 - 41,0 1120

B 48 PS / 2200 min⁻¹
1100 37,0 - 39,0 1120

A 44 PS / 2200 min⁻¹
1100 38,0 - 40,0 1120

F 48 PS / 2100 min⁻¹
1050 37,5 - 39,5 1060

B 46 PS / 2100 min⁻¹
1050 35,5 - 37,5 1060

A 42 PS / 2100 min⁻¹
1050 36,0 - 38,0 1060

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

F 46 PS / 2000 min⁻¹
1000 38,0 - 40,0 1010

B 44 PS / 2000 min⁻¹
1000 35,5 - 37,5 1010

A 40 PS / 2000 min⁻¹
1000 36,0 - 38,0 1010

B 40 PS / 1800 min⁻¹
900 34,5 - 36,5 910

A 36 PS / 1800 min⁻¹
900 34,0 - 36,0 910

B 32 PS / 1500 min⁻¹
750 30,5 - 32,5 760

A 30 PS / 1500 min⁻¹
750 33,0 - 35,0 760

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control rod stop Test oil temp 40°C (104°F)		Rotational speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

F 93 PS / 3000 min⁻¹
1500 39,5 - 41,5 1520

B 90 PS / 3000 min⁻¹
1500 38,0 - 40,0 1520

A 84 PS / 3000 min⁻¹
1500 39,0 - 41,0 1520

F 90 PS / 2800 min⁻¹
1400 39,5 - 41,5 1420

B 87 PS / 2800 min⁻¹
1400 38,0 - 40,0 1420

A 81 PS / 2800 min⁻¹
1400 39,0 - 41,0 1420

F 87 PS / 2600 min⁻¹
1300 39,5 - 41,5 1320

B 84 PS / 2600 min⁻¹
1300 38,0 - 40,0 1320

A 78 PS / 2600 min⁻¹
1300 38,5 - 40,5 1320

F 84 PS / 2500 min⁻¹
1250 39,0 - 41,0 1270

B 81 PS / 2500 min⁻¹
1250 37,0 - 39,0 1270

A 75 PS / 2500 min⁻¹
1250 38,0 - 40,0 1270

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

F 81 PS / 2400 min⁻¹
1200 38,0 - 40,0 1220

B 78 PS / 2400 min⁻¹
1200 36,5 - 38,5 1220

A 72 PS / 2400 min⁻¹
1200 38,0 - 40,0 1220

F 78 PS / 2300 min⁻¹
1150 38,0 - 40,0 1170

B 75 PS / 2300 min⁻¹
1150 36,5 - 38,5 1170

A 69 PS / 2300 min⁻¹
1150 37,0 - 39,0 1170

F 75 PS / 2200 min⁻¹
1100 38,0 - 40,0 1120

B 72 PS / 2200 min⁻¹
1100 36,0 - 38,0 1120

A 66 PS / 2200 min⁻¹
1100 37,0 - 39,0 1120

F 72 PS / 2100 min⁻¹
1050 37,0 - 39,0 1060

B 69 PS / 2100 min⁻¹
1050 35,5 - 37,5 1060

A 63 PS / 2100 min⁻¹
1050 36,0 - 38,0 1060

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stroke Test oil temp. \pm PC (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

F 69 PS / 2000 min⁻¹
1000 36,5 - 38,5 1010

B 66 PS / 2000 min⁻¹
1000 34,5 - 36,5 1010

A 60 PS / 2000 min⁻¹
1000 35,0 - 37,0 1010

B 60 PS / 1800 min⁻¹
900 33,5 - 35,5 910

A 54 PS / 1800 min⁻¹
900 34,0 - 36,0 910

B 48 PS / 1500 min⁻¹
750 31,0 - 33,0 760

A 45 PS / 1500 min⁻¹
750 33,0 - 35,0 760

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

B 35,5 PS / 3000 min⁻¹

1500 55,0 - 57,0 1520 800 52,5 - 55,5

A 32 PS / 3000 min⁻¹

1500 51,0 - 53,0 1520

F 41 PS / 2800 min⁻¹

1400 66,5 - 68,5 1420 800 55,5 - 58,5

F 38,5 PS / 2500 min⁻¹

1250 62,5 - 64,5 1270 800 55,5 - 58,5

B 37 PS / 2500 min⁻¹

1250 59,5 - 61,5 1270 800 52,5 - 55,5

A 34 PS / 2500 min⁻¹

1250 55,5 - 57,5 1270

F 36,5 PS / 2300 min⁻¹

1150 60,5 - 62,5 1170 800 55,5 - 58,5

B 35 PS / 2300 min⁻¹

1150 58,5 - 60,5 1170 800 52,5 - 55,5

A 32 PS / 2300 min⁻¹

1150 53,0 - 55,0 1170

F 33 PS / 2000 min⁻¹

1000 58,5 - 60,5 1010 750 55,0 - 58,0

B 31 PS / 2000 min⁻¹

1000 55,0 - 57,0 1010 750 52,5 - 55,5

A 28,5 PS / 2000 min⁻¹

1000 50,0 - 52,0 1010

C. Settings for Fuel Injection Pump with Fitted Governor

①

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

B 28,5 PS / 1800 min⁻¹

900	52,5 - 54,5	910	750	52,0 - 55,0
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A 26 PS / 1800 min⁻¹

900	48,0 - 50,0	910
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B 24 PS / 1500 min⁻¹

750	46,5 - 48,5	760	750	50,5 - 53,5
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A 22 PS / 1500 min⁻¹

750	51,0 - 53,0	760
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C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational speed limitation	Fuel delivery characteristics		Starting fuel delivery idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

B 53 PS / 3000 min⁻¹

1500 54,5 - 56,5 1520 800 51,0 - 54,0

A 48 PS / 3000 min⁻¹

1500 50,5 - 52,5 1520

F 62 PS / 2800 min⁻¹

1400 66,5 - 68,5 1420 800 54,0 - 57,0

F 58 PS / 2500 min⁻¹

1250 62,5 - 64,5 1270 800 54,0 - 57,0

B 56 PS / 2500 min⁻¹

1250 59,5 - 61,5 1270 800 51,0 - 54,0

A 51 PS / 2500 min⁻¹

1250 54,5 - 56,5 1270

F 55 PS / 2300 min⁻¹

1150 58,5 - 60,5 1170 800 54,0 - 57,0

B 53 PS / 2300 min⁻¹

1150 57,5 - 59,5 1170 800 51,0 - 54,0

A 48 PS / 2300 min⁻¹

1150 51,5 - 53,5 1170

F 49,5 PS / 2000 min⁻¹

1000 57,5 - 59,5 1010 750 54,0 - 57,0

B 46,5 PS / 2000 min⁻¹

1000 53,5 - 55,5 1010 750 51,0 - 54,0

A 43 PS / 2000 min⁻¹

1000 48,5 - 50,5 1010

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

B 43 PS / 1800 min⁻¹

900 52,5 - 54,5 910 750 52,0 - 55,0

A 39 PS / 1800 min⁻¹

900 47,5 - 49,5 910

B 36 PS / 1500 min⁻¹

750 49,5 - 51,5 760 650 49,0 - 52,0

A 33 PS / 1500 min⁻¹

750 45,5 - 47,5 760

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation rev/min	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm ³ /1000 strokes		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

B 71 PS / 3000 min⁻¹

1500 54,5 - 56,5 1520 800 62,0 - 65,0

A 64 PS / 3000 min⁻¹

1500 49,5 - 51,5 1520

F 83 PS / 2800 min⁻¹

1400 65,5 - 67,5 1420 800 63,0 - 66,0

F 78 PS / 2500 min⁻¹

1250 61,5 - 63,5 1270 800 50,0 - 53,0

B 74,5 PS / 2500 min⁻¹

1250 58,5 - 60,5 1270 800 50,0 - 53,0

A 68 PS / 2500 min⁻¹

1250 53,5 - 55,5 1270

F 73 PS / 2300 min⁻¹

1150 60,5 - 62,5 1170 800 52,0 - 55,0

B 71 PS / 2300 min⁻¹

1150 58,5 - 60,5 1170 800 50,0 - 53,0

A 64 PS / 2300 min⁻¹

1150 51,5 - 53,5 1170

F 66 PS / 2000 min⁻¹

1000 57,5 - 59,5 1010 750 52,0 - 55,0

B 62,5 PS / 2000 min⁻¹

1000 53,5 - 55,5 1010 750 50,0 - 53,0

A 57 PS / 2000 min⁻¹

1000 48,5 - 50,5 1010

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

B 57 PS / 1800 min⁻¹

900	51,5 - 53,5	910	750	49,0 - 52,0
-----	-------------	-----	-----	-------------

A 52 PS / 1800 min⁻¹

900	45,5 - 47,5	910
-----	-------------	-----

B 48 PS / 1500 min⁻¹

750	48,5 - 50,5	760	650	47,0 - 50,0
-----	-------------	-----	-----	-------------

A 44 PS / 1500 min⁻¹

750	45,5 - 47,5	760
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C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

B 106 PS / 3000 min⁻¹

1500 55,5 - 57,5 1520 800 50,0 - 53,0

A 96 PS / 3000 min⁻¹

1500 49,5 - 51,5 1520

F 125 PS / 2800 min⁻¹

1400 66,5 - 68,5 1420 800 54,0 - 57,0

F 117 PS / 2500 min⁻¹

1250 61,5 - 63,5 1270 800 54,0 - 57,0

B 112 PS / 2500 min⁻¹

1250 58,5 - 60,5 1270 800 50,0 - 53,0

A 102 PS / 2500 min⁻¹

1250 53,5 - 55,5 1270

F 110 PS / 2300 min⁻¹

1150 59,5 - 61,5 1170 800 54,0 - 57,0

B 106 PS / 2300 min⁻¹

1150 56,5 - 58,5 1170 800 50,0 - 53,0

A 96 PS / 2300 min⁻¹

1150 51,5 - 53,5 1170

F 99 PS / 2000 min⁻¹

1000 56,5 - 58,5 1010 750 54,0 - 57,0

B 94 PS / 2000 min⁻¹

1000 53,5 - 55,5 1010 750 50,0 - 53,0

A 86 PS / 2000 min⁻¹

1000 47,5 - 49,5 1010

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

B 86 PS / 1800 min⁻¹

900 49,5 - 51,5 910 750 53,0 - 56,0

A 78 PS / 1800 min⁻¹

900 46,5 - 48,5 910

B 72 PS / 1500 min⁻¹

750 49,5 - 51,5 760 650 47,0 - 50,0

A 66 PS / 1500 min⁻¹

750 45,5 - 47,5 760

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

F 33 PS / 2800 min⁻¹

1400 51,5 - 53,5 1420 800 46,0 - 49,0

F 32 PS / 2500 min⁻¹

1250 52,5 - 54,5 1270 800 46,0 - 49,0

B 31 PS / 2500 min⁻¹

1250 49,5 - 51,5 1270 800 44,0 - 47,0

A 28 PS / 2500 min⁻¹

1250 49,5 - 51,5 1270

F 30 PS / 2300 min⁻¹

1150 48,5 - 50,5 1170 800 46,0 - 49,0

B 28,5 PS / 2300 min⁻¹

1150 45,5 - 47,5 1170 800 44,0 - 47,0

A 26 PS / 2300 min⁻¹

1150 45,5 - 47,5 1170

F 26 PS / 2000 min⁻¹

1000 43,5 - 45,5 1010 800 46,0 - 49,0

B 25 PS / 2000 min⁻¹

1000 41,5 - 43,5 1010 800 44,0 - 47,0

A 23 PS / 2000 min⁻¹

1000 41,5 - 43,5 1010

A 21 PS / 1800 min⁻¹

900 41,5 - 43,5 910

A 17 PS / 1500 min⁻¹

750 39,5 - 41,5 760

Checking values in brackets

* 1 mm less control rod travel than col. 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

F 50 PS / 2800 min⁻¹

1400 48,5 - 50,5 1420 800 46,0 - 49,0

F 48,5 PS / 2500 min⁻¹

1250 50,5 - 52,5 1270 800 46,0 - 49,0

B 46,5 PS / 2500 min⁻¹

1250 47,5 - 49,5 1270 800 43,0 - 46,0

A 42 PS / 2500 min⁻¹

1250 47,5 - 49,5 1270

F 46 PS / 2300 min⁻¹

1150 47,5 - 49,5 1170 800 46,0 - 49,0

B 44 PS / 2300 min⁻¹

1150 45,5 - 47,5 1170 800 43,0 - 46,0

A 40 PS / 2300 min⁻¹

1150 45,5 - 47,5 1170

F 40 PS / 2000 min⁻¹

1000 44,5 - 46,5 1010 800 46,0 - 49,0

B 38,5 PS / 2000 min⁻¹

1000 42,5 - 44,5 1010 800 43,0 - 46,0

A 35 PS / 2000 min⁻¹

1000 42,5 - 44,5 1010

A 31,5 PS / 1800 min⁻¹

900 40,5 - 42,5 910

A 26 PS / 1500 min⁻¹

750 39,5 - 41,5 760

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

F 68 PS / 2800 min⁻¹

1400 49,5 - 51,5 1420 800 46,0 - 49,0

F 66 PS / 2500 min⁻¹

1250 50,5 - 52,5 1270 800 46,0 - 49,0

B 63 PS / 2500 min⁻¹

1250 47,5 - 49,5 1270 800 44,0 - 47,0

A 57,5 PS / 2500 min⁻¹

1250 47,5 - 49,5 1270

F 61 PS / 2300 min⁻¹

1150 47,5 - 49,5 1170 800 46,0 - 49,0

B 58,5 PS / 2300 min⁻¹

1150 45,5 - 47,5 1170 800 44,0 - 47,0

A 53,5 PS / 2300 min⁻¹

1150 45,5 - 47,5 1170

F 53 PS / 2000 min⁻¹

1000 43,5 - 45,5 1010 800 46,0 - 49,0

B 51 PS / 2000 min⁻¹

1000 41,5 - 43,5 1010 800 44,0 - 47,0

A 46,5 PS / 2000 min⁻¹

1000 41,5 - 43,5 1010

A 42 PS / 1800 min⁻¹

900 40,5 - 42,5 910

A 35 PS / 1500 min⁻¹

750 39,5 - 41,5 760

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

F 102 PS / 2800 min⁻¹

1400 49,5 - 51,5 1420 800 46,0 - 49,0

F 99 PS / 2500 min⁻¹

1250 50,5 - 52,5 1270 800 46,0 - 49,0

B 95 PS / 2500 min⁻¹

1250 47,5 - 49,5 1270 800 44,0 - 47,0

A 86 PS / 2500 min⁻¹

1250 47,5 - 49,5 1270

F 92 PS / 2300 min⁻¹

1150 47,5 - 49,5 1170 800 46,0 - 49,0

B 88 PS / 2300 min⁻¹

1150 45,5 - 47,5 1170 800 44,0 - 47,0

A 80 PS / 2300 min⁻¹

1150 45,5 - 47,5 1170

F 80 PS / 2000 min⁻¹

1000 43,5 - 45,5 1010 800 46,0 - 49,0

B 77 PS / 2000 min⁻¹

1000 41,5 - 43,5 1010 800 44,0 - 47,0

A 70 PS / 2000 min⁻¹

1000 41,5 - 43,5 1010

A 63 PS / 1800 min⁻¹

900 40,5 - 42,5 910

A 52,5 PS / 1500 min⁻¹

750 39,5 - 41,5 760

Checking values in brackets

* 1 mm less control rod travel than col. 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

B 48 PS / 3000 min⁻¹

1500 47,0 - 49,0 1520 800 49,5 - 52,5

A 43,5 PS / 3000 min⁻¹

1500 44,0 - 46,0 1520

F 55 PS / 2800 min⁻¹*

1400 53,5 - 55,5 1420 800 52,5 - 55,5

F 53 PS / 2500 min⁻¹

1250 55,5 - 57,5 1270 800 52,5 - 55,5

B 50 PS / 2500 min⁻¹

1250 52,5 - 54,5 1270 800 49,5 - 52,5

A 46,5 PS / 2500 min⁻¹

1250 48,0 - 50,0 1270

F 50 PS / 2300 min⁻¹

1150 56,0 - 58,0 1170 800 51,0 - 54,0

B 48,5 PS / 2300 min⁻¹

1150 51,5 - 53,5 1170 800 49,5 - 52,5

A 44 PS / 2300 min⁻¹

1150 47,0 - 49,0 1170

F 46 PS / 2000 min⁻¹

1000 54,0 - 56,0 1010 750 52,5 - 55,5

B 44 PS / 2000 min⁻¹

1000 50,5 - 52,5 1010 750 50,0 - 53,0

A 40 PS / 2000 min⁻¹

1000 46,0 - 48,0 1010

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

B 40 PS / 1800 min⁻¹

900 49,5 - 51,5 910 750 50,0 - 53,0

A 36,5 PS / 1800 min⁻¹

900 45,0 - 47,0 910

B 33,5 PS / 1500 min⁻¹

750 47,5 - 49,5 760

A 30,5 PS / 1500 min⁻¹

750 43,5 - 45,5 760

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

B 64 PS / 3000 min⁻¹

1500 47,5 - 49,5 1520 800 49,0 - 52,0

A 58 PS / 3000 min⁻¹

1500 44,0 - 46,0 1520

F 74 PS / 2800 min⁻¹

1400 53,5 - 55,5 1420 800 52,0 - 55,0

F 70,5 PS / 2500 min⁻¹

1250 52,5 - 54,5 1270 800 52,0 - 55,0

B 67 PS / 2500 min⁻¹

1250 49,0 - 51,0 1270 800 49,0 - 52,0

A 61 PS / 2500 min⁻¹

1250 44,5 - 46,5 1270

F 67 PS / 2300 min⁻¹

1150 51,5 - 53,5 1170 800 52,0 - 55,0

B 64,5 PS / 2300 min⁻¹

1150 49,0 - 51,0 1170 800 49,0 - 52,0

A 58,5 PS / 2300 min⁻¹

1150 44,5 - 46,5 1170

F 61 PS / 2000 min⁻¹

1000 50,0 - 52,0 1010 750 49,5 - 52,5

B 58,5 PS / 2000 min⁻¹

1000 48,0 - 50,0 1010 750 49,5 - 52,5

A 53 PS / 2000 min⁻¹

1000 44,0 - 46,0 1010

Checking values in brackets

* 1 mm less control rod travel than col. 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

B 53 PS / 1800 min⁻¹

900 47,0 - 49,0 910 750 49,5 - 52,5

A 49 PS / 1800 min⁻¹

900 43,0 - 45,0 910

B 44,5 PS / 1500 min⁻¹

750 47,0 - 49,0 760

A 41 PS / 1500 min⁻¹

750 43,0 - 45,0 760

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

B 96 PS / 3000 min⁻¹

1500 51,5 - 53,5 1520 800 50,0 - 53,0

A 87 PS / 3000 min⁻¹

1500 47,5 - 49,5 1520

F 112 PS / 2800 min⁻¹

1400 58,0 - 60,0 1420 800 53,0 - 56,0

F 106 PS / 2500 min⁻¹

1250 57,5 - 59,5 1270 800 53,0 - 56,0

B 101 PS / 2500 min⁻¹

1250 54,0 - 56,0 1270 800 50,0 - 53,0

A 92 PS / 2500 min⁻¹

1250 49,0 - 51,0 1270

F 101 PS / 2300 min⁻¹

1150 57,5 - 59,5 1170 800 53,0 - 56,0

B 97 PS / 2300 min⁻¹

1150 55,0 - 57,0 1170 800 50,0 - 53,0

A 88 PS / 2300 min⁻¹

1150 50,0 - 52,0 1170

F 92 PS / 2000 min⁻¹

1000 52,5 - 54,5 1010 750 50,0 - 53,0

B 88 PS / 2000 min⁻¹

1000 50,0 - 52,0 1010 750 50,0 - 53,0

A 80 PS / 2000 min⁻¹

1000 45,5 - 47,5 1010

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

B 80 PS / 1800 min⁻¹

900 50,0 - 52,0 910 750 50,0 - 53,0

A 73 PS / 1800 min⁻¹

900 45,5 - 47,5 910

B 67 PS / 1500 min⁻¹

750 50,0 - 52,0 760 650 52,0 - 55,0

A 61 PS / 1500 min⁻¹

750 45,5 - 47,5 760

①

Test Specifications

Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 7,0 a
4. Edition

En

PE 6 P 100/320 RS 100 RQV 200-1200 PA 122/2 R
(A)

superseded 6.74
company Volvo
engine: TD 70

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke		mm (from BDC)				
Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm
1	2	3	4	2	3	6
1000	12,0	12,7-13,4	0,5			2,5 ± 0,1 (max. 2,2-2,9)
600	9,0	6,1-7,3				
600	12,0	11,3-12,7				
600	15,0	16,5-18,2				
200	9,0	4,2-5,2				

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca. 68	1290	15,0-18,0	-	-	-	ca. 23	200	8,6-10,0	1290	8,3
	1550	0					300	6,4-8,8		
ca. 66	1200	15,0-17,8					400	2,9-5,4		
	1300	7,7-12,6					500	0,7-2,7		
	1400	0 - 7,6					590	0		
	1500	0				③a				

Torque control travel a = - mm
abnorm. sldg-sleeve pos'n = 36,0 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery		Rotational speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery		Torque-control travel	
Control-rod stop	Test oil temp. 40°C (104°F)		high idle speed	idle speed	idle switching point			
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA	0,7 bar	1230-1240 *	LDA	0 bar	100	150,0-180,0	-	-
700	70,0-72,0 (69,0-73,0)		700	59,5-6,25 (58,5-63,5)	200	11,0-15,0		
					Dispersion max, 2,5			

Checking values in brackets

* 1 mm less control rod travel than col. 2
4.83

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

VOL 7,0 a - 2 -

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE 6 P .. RS 100 + RQV..PA 122/2R	0,11-0,14	0,05-0,11	

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 FIA 13,8 a 8

1. Edition

En

PE 6 P 120 A 720 RS 167 RQV 225-1100 PA 478 R

supersedes:

company: Fiat

engine 8210-02.422

Komb.-Nr. 0 401 846 428

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

 Port closing at prestroke $\begin{pmatrix} 2,0 \\ 1,95 \end{pmatrix} - \begin{pmatrix} 2,1 \\ 2,15 \end{pmatrix}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,4+0,1	17,6-17,9	0,5 (0,8)			
225	7,5-7,7	1,7-2,3	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1100	15,2-17,8	-	-	-	ca. 11	100	min. 9,1	200	0,7-0,8
ca. 61	10,4 4,0 1350	1140-1150 1205-1235 0-1,0				295-405	225	7,5-7,7	500	2,8-3,0
									800	4,7-4,9
									1100	8,0

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1100	176,0-179,0 (173,0-182,0)	1140-1150*	-	-	100	19,5-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.83

Test Specifications

Fuel Injection Pumps ①

and Governors

WPP 001/ 4 IHC 7,6 C

2. Edition

En

PES 6 MW 100/320 RS 1103
RQV 350-1300 MW 43-1
0 403 446 132

DHK 1 688 901 016
207 + 3 bar

supersedes 12.82
company: IHC-USA
engine: DT 466 B
143,4 kW (195 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{4,00-4,10}{(3,95-4,15)}$ mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	10,9+0,1	9,55-9,75	0,35(0,6)			
350	5,7-5,8	1,6 - 2,0	0,35(0,55)			
1300	10,9+0,1		0,65(0,7)			
500	9,4-9,5					

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	8,0 0-1	1440-1505 1550	-	-	-	ca.13	100 350	min.9,0 5,8-6,0		
ca.61,5	4,0	1470-1480				360-700 ③a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed limitation intermediate speed ④a	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 900	0,9 bar 95,5-97,5 (93,5-99,5)		LDA 1300	0,9 bar 96,5-100,5 (94,5-102,5)	100	19-21 mm RW 140-180		
			LDA 500	0 bar 63,5-65,5 (61,5-67,5)	220-280 (210-290)			

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
RS 1103 mit RQV..MW 43-1	0,4		10,5 - 10,6
		0,9	10,9 - 11,0
		0	9,4 - 9,5
		0,2	9,8 - 9,9

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Please note:

- Carry out pump adjustment only with overflow valve 1 417 413 040 and IH hose with throttle 1.57 mm diameter.
- Set locking device before testing position of sliding device.
- In unlocked condition do not operate at a speed higher than $n = 500 \text{ min}^{-1}$.
- Set lower idle speed at stop screw.
- Set shutoff stop 1.5 - 2.0 mm in front of the stop.

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 18,3 d 1

1. Edition

En

PE 10 P 110 A 320 LS 3818-1 RQV 350-1150 PA 678

1 - 8 - 7 - 6 - 3 - 5 - 2 - 10 - 9 - 4

0 -27 -72 -99 -144-171-216-243-288-315° ± 0,5° (± 0,75°)

supersedes -

company: Daimler-Benz

engine: OM 423

261 kW (355 PS)

Komb.-Nr. 0 401 849 709

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke $4,0 - 4,1$ mm (from BDC) = RW 9,0 - 12,0 mm
(3,95-4,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	12,4+0,1	12,2-12,4	0,4(0,8)			
350	8,5-8,7	1,4-2,2	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1200	15,2-17,8	-	-	-	ca. 18	100	min. 10,0	300	1,2-1,4
ca. 62	11,4	1190-1200					350	8,5-8,7	580	3,6-3,9
	4,0	1250-1280							870	5,2-5,6
	1400	0-1,0				330-500			1150	7,8
						③a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1150	122,0-124,0 (119,0-127,0)	1190-1200*	600	112,0-116,0 (109,0-119,0)	100	130,0-150,0	1150	12,4+0,1
1150	92,0-94,0 (89,0-97,0) **		900	113,0-118,0 (110,0-121,0)			600	12,9+0,1
							900	12,6+0,2

Checking values in brackets

* 1 mm less control rod travel than col. 2

** Reduced-delivery stop

3.83

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F3

F3

①

Test Specifications

Fuel Injection Pumps ①

and Governors

WPP 001/4 RVI 8,8 b 1
5. Edition

En

PES 6 P 120 A 320 RS 417 RQV 300-1150 PA 527 K

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750_067.

superseded 1.82

company RVI

engine: MIDS 062030

158 kW (215 PS)

Komb.-Nr. 0 402 046 226

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing mark 9,5° after port closing
Zyl.1

Port closing at prestroke

2,8-2,9
(2,75-2,95)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	8,5-8,6	14,8-15,0	0,5(0,9)			
600	2,7-2,8	1,3- 1,9	0,8(0,7)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1200	15,2-17,8	-	-	-	ca. 10	100 300	min. 5,7 4,1-4,3	250 550	0,4-0,7 3,6-3,7
ca. 58	7,5 4,0 1400	1205-1215 1275-1305 0-1,0				330-445 3a			850 1150	5,1-5,2 7,5

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2		Rotational-speed limitation intermediate speed 4a	Fuel delivery characteristics high idle speed 5b		Starting fuel delivery idle switching point 6		Torque-control travel 5	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1150	147,5-149,5 (144,5-152,5)	1205-1215*	750 500	132,0-138,0 (129,0-141,0) 80,0-86,0 (77,0-89,0)	100 300 220 (100)	120,0-140,0 18,0- 24,0	1150 350 750 500	8,5+0,1 7,0+0,4 7,7+0,2 7,2+0,3

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.83

①

Test Specifications

Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 8,8b

5. Edition

En

PES 6 P 120 A 320 RS 417 RQV 300-1200 PA 527 K

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067.

superseded 8.81

company: RVI

engine: MIDS 062030

158 kW (215 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing mark 9,5° after port closing

Port closing at prestroke		2,8 - 2,9 (2,75 - 2,95)		mm (from BDC)		Zyl. 1	
Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning	(torque-control valve)
rev/min	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm	
1	2	3	4	2	3	6	
1200	9,3-9,4	15,4 - 15,6	0,5(0,9)				
300	4,1-4,3	1,8 - 2,4	0,5(1,2)				

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1200	15,2-17,8	-	-	-	ca. 10	100	min. 5,7	250	0,4-0,7
ca. 60	8,3 4,0 1500	1240-1250 1330-1360 0-1,0				330-445	300	4,1-4,3	570 880 1200	3,6-3,8 5,3-5,4 8,0

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery		Rotational speed	Fuel delivery characteristics		Starting fuel delivery		Torque-control	
Control-rod stop	Test oil temp. 40°C (104°F)		high idle speed	intermediate speed	idle	switching point	travel	Control rod travel
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	9
1200	154,0-156,0 (151,0-159,0)	1240-1250*	800	140,5-146,5 (137,5-149,5)	100	130,0-150,0	1200	9,3+0,1
			500	82,0- 88,0 (79,0- 90,0)	300	18,0- 24,0 100-220 (80-240)	350	7,7+0,2
							750	8,5+0,2

Checking values in brackets

* 1 mm less control rod travel than col. 2

12.82

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F5

F5

Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 IHC 5,8t

2. Edition

En

supersedes 6.82

company: IHC

engine: D 358/PC 11

VE 6/12 F 1350 R64

0 460 426 016

Nozzle-and-holder assembly

1 688 901 020 (172 + 3 bar)

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/.

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1100	5,0-5,4 mm		
1.2 Supply pump pressure	1100	5,4-6,0 bar (kgf/cm ²)		
1.3 Full-load delivery without charge-air pressure	1150	84,0-85,0 cm ³ /1000 strokes		3,5
Full-load delivery with charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle speed regulation	500	14,5-20,5 cm ³ /1000 strokes		3,5
1.5 Start	100	min. 100,0 cm ³ /1000 strokes		
1.6 Full-load speed regulation	1450	9,0-17,0 cm ³ /1000 strokes		
1.7 Load-dependent start of delivery	--	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	600 1,6-2,4(1,3-2,7)	1100 (4,5-5,9)	1250 5,5-6,3(5,2-6,6)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 2,7-3,3		1350 6,3-6,9
Overflow delivery	n = rev/min cm ³ /10 s	500 55-138(40-153)		1350 55-138(40-158)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1510 1450 1400 1300 1150 800 500	0 9,0-17,0 (8,0-18,0) 44,0-50,0 (42,0-52,0) 80,0-83,0 (78,5-84,5) (81,5-87,5) 77,0-81,0 (76,0-82,0) 63,0-68,0 (61,8-69,2)	
switch-off	1350	0	
Idle stop	520-570 500	0 (12,5-22,5)	
End stop	250 350	min. 100 max. 80	
2.4 Solenoid	max. cut-in voltage xxxx min. 10,0 V xxxxxxx rated voltage 12V. test voltage		

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,7-5,9
MS	1,0-1,2
SVS	max. 6,0
A XK	20,2-22,2
B XL	15,8-19,8

Observations

Setting of the pointer
at a stroke of 1 mm in
relation to outlet "A".

Test Specifications

Distributor-type Fuel-injection Pumps

WPP 001/4 PER 5,8b3

2. Edition

En

VE 6/12 F 1300 L 73

0 460 426 020

 Nozzle-and-holder assembly
 1 688 901 020 (172 + 3 bar)

supersede 6.82

company: Perkins.

engine: T 6.354.4

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,3 mm

see VDT-W-460/..

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	600	3,1-3,5 mm	0,75	
1.2 Supply pump pressure	600	3,4-4,0 bar (kgf/cm ²)	0,75	
1.3 Full-load delivery without charge-air pressure	1000	92,0-95,0 cm ³ /1000 strokes	0	
Full-load delivery with charge-air pressure	1000	98,0-99,0 cm ³ /1000 strokes	0,75	3,5
1.4 Idle speed regulation	300	10,0-14,0 cm ³ /1000 strokes	0	3,5
1.5 Start	100	min. 100,0 cm ³ /1000 strokes	0	
1.6 Full-load speed regulation	1550	5,0-13,0 cm ³ /1000 strokes	0,75	
1.7 Load-dependent start of delivery	--	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device LDA=0,75 bar	n = rev/min mm	400 0,4-1,2(0,1-1,5)	600 (2,6-4,0)	800 3,6-4,4(3,3-4,7)
2.2 Supply pump LDA=0,75 bar	n = rev/min bar (kgf/cm ²)	400 2,4-3,0		1300 6,9-7,5
Overflow delivery	n = rev/min cm ³ /10 s	500 55-138(40-153)		1300 55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1550	(4,0-14,0)	0,75
	1480	42,0-48,0 (40,0-50,0)	0,75
	1300	90,0-93,0 (88,5-94,5)	0,75
	1000	(90,5-96,5)	0
	1000	(95,5-101,5)	0,75
	* 700	92,5-96,5 (91,5-97,5)	0,32
	500	85,0-89,0 (83,3-90,7)	0
switch-off	1300	0	
Idle stop	300	(7,0-17,0)	
	350	min. 1,0	
	400	max. 1,0	
End stop	100	min. 100	
	200	max. 85	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	--
KF	5,1-5,3
MS	1,1-1,3
SVS	max. 6,0
A XK	20,2-22,2
B XL	10,6-13,9

Observations

 Manifold-pressure
 compensator stroke
 = 3,5 mm
 Correction at the
 adjusting nut. (46)

2.4 Solenoid max. cut-in voltage xxx min. 10,0 V

rated voltage 12V.

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Test Specifications Distributor-type Fuel-injection Pumps

VE 6/11 F 1800 L 18

0 460 416 001

supersedes -

company: Volvo

engine:

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,2 mm

see VDT-W-460/..

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	3,2-3,6 mm	0,74	
1.2 Supply pump pressure	1500	6,0-6,7 bar (kgf/cm ²)	0,74	
1.3 Full-load delivery without charge-air pressure	500	47,0-49,0 cm ³ /1000 strokes	0	
Full-load delivery with charge-air pressure	1500	63,5 cm ³ /1000 strokes	0,74	3,0
1.4 Idle speed regulation	325	8,0 cm ³ /1000 strokes	0	2,0
1.5 Start	100	min. 72,0 cm ³ /1000 strokes	0	
1.6 Full-load speed regulation	2040	19,5-25,5 cm ³ /1000 strokes	0,74	
1.7 Load-dependent start of delivery				

2. Test Specifications

checking values in brackets ()

2.1 Timing device LDA = 0,74 bar	n = rev/min mm	1000 0,7-1,7(0,5-1,9)	1500 (2,7-4,1)	1800 4,5-5,3(4,2-5,6)
2.2 Supply pump LDA = 0,74 bar	n = rev/min bar (kgf/cm ²)	400 2,0-2,7		1800 6,9-7,6
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)		1800 55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2140-2220	0	0,74
	2120	max. 6,0	0,74
	2040		0,74
	1800	57,2-59,8 (18,0-27,0)	0,74
	1500	(61,3-66,7)	0,74
	* 500	51,5-53,5 (49,1-55,9)	0,28
	500	(44,6-51,4)	0
switch-off	1800	0	
Idle stop	370-450 325	0 (5,5-14,5)	
2.4 Solenoid	max. cut-in voltage test voltage	xxx min. 10 V xxxxxxx rated voltage 12V.	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	-
KF	5,9-6,2
MS	1,5-1,7
SVS	max. 4,2
A	5,8-10,8
B	10,4-15,6

Observations

Manifold-pressure
compensator stroke
= 4,0 mm

Test Specifications

Distributor-type

Fuel-injection Pumps

VE 6/10 F 2150 L 105

0 460 406 014

supersedes -

company: VWV

engine: 087 T-LT

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/..

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	2,3-2,7 mm	0,75	
1.2 Supply pump pressure	1500	5,9-6,5 bar (kgf/cm ²)	0,75	
1.3 Full-load delivery without charge-air pressure	600	23,5-24,5 cm ³ /1000 strokes	0	
Full-load delivery with charge-air pressure	1500	41,5-42,5 cm ³ /1000 strokes	0,75	
1.4 Idle speed regulation	375	6,0-10,0 cm ³ /1000 strokes	0	
1.5 Start	100	min. 38,0 cm ³ /1000 strokes	0	
1.6 Full-load speed regulation	2400	9,0-15,0 cm ³ /1000 strokes	0,75	
1.7 Load-dependent start of delivery	-			

2. Test Specifications

checking values in brackets ()

2.1 Timing device LDA = 0,75 bar	n = rev/min mm	1000 0,5-1,3 (0,2-1,6)	1500 (1,8-3,2)	2150 4,4-5,2 (4,1-5,5)
2.2 Supply pump LDA = 0,75 bar	n = rev/min bar (kgf/cm ²)	600 3,5-4,1		2150 7,6-8,2
Overflow delivery	n = rev/min cm ³ /10 s	600 55-138 (40-153)		2150 55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2600 2400 2150 1500 750 600	max. 3,0 9,0-15,0 35,0-37,0 (33,7-38,3) (39,7-44,3) 32,5-33,5 (30,7-35,3) (21,0-27,0)	0,75 0,75 0,75 0,75 0,3 0
switch-off elect.	400	0	
Idle stop	375 450	max. 2,5 (4,0-12,0)	
End stop	400 500	min. 25 max. 27	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	6,3-6,6
MS	1,0-1,2
SVS	max. 3,8
XK	20,2-22,2
XL	8,6-11,9

Observations
Manifold-pressure
compensator stroke
= 4,5 mm
Correction at the
adjusting nut. (46)

2.4 Solenoid max. cut-in voltage xxx min. 10 V
xxxxxxx rated voltage 12V.

Test Specifications Distributor-type Fuel-injection Pumps

VE 6/10 F 2150 L 104
0 460 406 013

supersedes -
company: VWV
engine: 087-LT

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/.

Testoil-ISO 4113

1. Settings	Rot speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	2,8-3,2 mm		
1.2 Supply pump pressure	1500	5,5-6,1 bar (kgf/cm ²)		
1.3 Full-load delivery without charge-air pressure	1500	28,0-29,0 cm ³ /1000 strokes		3,0
Full-load delivery with charge-air pressure	-	- cm ³ /1000 strokes		
1.4 Idle speed regulation	375	6,0-10,0 cm ³ /1000 strokes		3,0
1.5 Start	100	min. 38,0 cm ³ /1000 strokes		
1.6 Full-load speed regulation	2400	9,0-15,0 cm ³ /1000 strokes		
1.7 Load-dependent start of delivery	-			

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 0,7-1,5(0,4-1,8)	1500 (2,3-3,7)	2150 4,9-5,7(4,6-6,0)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	600 3,0-3,6		2150 7,3-7,9
Overflow delivery	n = rev/min cm ³ /10 s	600 55-138(40-153)		2150 55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2600 2400 2150 1500 750	max. 3,0 (8,0-16,0) 23,0-25,0 (21,7-26,3) (26,2-30,8) 25,0-28,0 (23,5-29,5)	
switch-off elect.	400	0	
Idle stop	375 500	max. 2,0 (4,0-12,0)	
End stop	400 500	min. 25 max. 27	
2.4 Solenoid	max. cut-in voltage xxx min. 10 V rated voltage 12V.		

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	6,4-6,7
MS	1,4-1,6
SVS	max. 4,2
A XK	20,2-22,2
B XL	8,0-11,4

Observations

Test Specifications Distributor-type Fuel-injection Pumps

VE 4/9 F 2100 R 97-1

O 460 494 115

supersedes

company: Renault

engine: 852-718

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/.

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1400	4,4-4,8 mm		
1.2 Supply pump pressure	1400	4,8-5,4 bar (kgf/cm ²)		
1.3 Full-load delivery without charge-air pressure	1400	38,0-39,0 cm ³ /1000 strokes		2,5
Full-load delivery with charge-air pressure	-	- cm ³ /1000 strokes		
1.4 Idle speed regulation	400	7,5-11,5 cm ³ /1000 strokes		2,5
1.5 Start	100	min. 52 cm ³ /1000 strokes		
1.6 Full-load speed regulation	2250	14,0-20,0 cm ³ /1000 strokes		
1.7 Load-dependent start of delivery	-			

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 2,6-3,4(2,3-3,7)	1400 (3,9-5,3)	2000 6,2-7,0(5,9-7,3)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	1000 3,8-4,4		2000 6,2-6,8
Overflow delivery	n = rev/min cm ³ /10 s	500 55-138(40-153)		2100 55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2450 2350 2250 2100 1400 1000 600	max. 1,0 1,0-5,0 (13,0-21,0) 33,1-35,1 (31,8-36,4) (36,2-40,8) 35,3-38,3 (34,5-39,1) 32,5-35,5 (31,0-37,0)	
switch-off	21000	0	
Idle stop	400 650	(5,5-13,5) max. 5,0	
End stop	280 400	min. 45 max. 45	
2.4 Solenoid	max. cut-in voltage XXX min. 10 V XXXXXXXXXX rated voltage 12V.		

3. Dimensions

for assembly
and adjustment
mm

Designation	mm
K	3,2-3,4
KF	5,7-6,0
MS	1,4-1,6
SVS	max. 3,8
A XK	20,2-22,2
B XL	7,9-11,2

Observations

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 REN 2,0 e
3. Edition

En

VE 4/9 F 2400 R 95
0 460 494 105

supersedes 12.82
company: Renault
engine: F 8 M

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

— mm

see VDT-W-460/.

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1400	4,1-4,5 mm		
1.2 Supply pump pressure	1400	4,9-5,5 bar (kgf/cm ²)		
1.3 Full-load delivery without charge-air pressure	1000	30,7-31,7 cm ³ /1000 strokes		2,5
Full-load delivery with charge-air pressure	—	— cm ³ /1000 strokes		
1.4 Idle speed regulation	425	6,0-10,0 cm ³ /1000 strokes		2,5
1.5 Start	100	min. 42,0 cm ³ /1000 strokes		
1.6 Full-load speed regulation	2650	10,5-16,5 cm ³ /1000 strokes		
1.7 Load-dependent start of delivery	1400	—		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 2,3-3,1 (2,0-3,4)	1400 (3,6-5,0)	2000 6,3-7,1 (6,0-7,4)	2400 7,0-7,7 (6,6-8,0)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	600 2,5-3,1			2400 7,7-8,3
Overflow delivery	n = rev/min cm ³ /10 s	600 55-138 (40-153)			2400 55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2750 2650 2500 2400 2100 1400 1000 600	max. (9,5-17,5) 21,0-29,0 (21,0-29,0) 27,5-30,1 (26,5-31,1) 28,9-31,3 (27,8-32,4) 31,7-33,7 (30,4-35,0) (28,9-33,5) 25,2-28,2 (23,7-29,7)	
switch-off	2400	0	
Idle stop	650 600 425	0 0,2-5,2 (4,0-12,0)	
End stop	330 500	min. 30,0 max. 29,0	
2.4 Solenoid	max. cut-in voltage xxx min. 10,0 V xxxxxxx rated voltage 12V.		

3. Dimensions

for assembly
and adjustment
mm

Designation	mm
K	3,2-3,4
KF	5,7-5,9
MS	1,2-1,4
SVS	2,8
XK	18,7-20,7
XL	9,5-12,8

Observations

Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 OPE 2,3 c

1. Edition

En

VE 4/9 F 2000 R 37-2

0 460 494 126

supersedes

company: Vauxhall

engine:

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/..

Pre-stroke setting

mm

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	2000	7,9-8,3 mm		
1.2 Supply pump pressure	2000	6,9-7,5 bar (kgf/cm ²)		
1.3 Full-load delivery without charge-air pressure	1250	41,5-42,5 cm ³ /1000 strokes		2,0
Full-load delivery with charge-air pressure	-	- cm ³ /1000 strokes		
1.4 Idle speed regulation	300	6,0-10,0 cm ³ /1000 strokes		2,0
1.5 Start	100	min. 54,0 cm ³ /1000 strokes		
1.6 Full-load speed regulation	2440	11,0-17,0 cm ³ /1000 strokes		
1.7 Load-dependent start of delivery	2000	-		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	600 1,2-2,2(1,0-2,4)	1250 4,4-5,2(4,1-5,5)	2000 (7,4-8,8)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	600 3,6-4,2	1250 5,1-5,7	
Overflow delivery	n = rev/min cm ³ /10 s	600 55-138(40-153)	2000 55-138(40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2520 2440 2000 1250 600	max. 12,0 (10,0-18,0) 34,2-36,8 (33,2-37,8) (39,7-44,3) 34,5-37,5 (33,0-39,0)	
switch-off	2000	0	
Idle stop	500 350 300	max. 1,0 min. 2,0 (4,0-12,0)	
End stop	350 450	min. 38,0 max. 38,0	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,4-5,7
MS	1,7-1,9
SVS	max. 3,4
XXK	20,2-22,2
XL	8,5-10,8

Observations

2.4 Solenoid max. cut-in voltage xxx min. 10,0 V
rated voltage 12V.

Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 IHC 6,6a
1.. Edition

En

Testoil-ISO 4113

VE 6/12 F 1250 R 38 (P)

0 460 426 007 008

Setting of the pointer at a stroke of 1 mm in
relation to outlet "A".

Overflow temperature 45° C

supersedes

company: IHC

engine: DT 402/3994

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment

Pre-stroke setting 0,4 mm \pm 0,02(0,04) mm

see VDT-W-460/

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1000	3,5-4,1 mm		
1.2 Supply pump pressure	1000	4,9-5,5 bar (kgf/cm ²)		
1.3 Full-load delivery without charge-air pressure	900	117,5-118,5 cm ³ /1000 strokes		2,5(4,5)
Full-load delivery with charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle speed regulation	500	15,0-21,0 cm ³ /1000 strokes		2,5(4,5)
1.5 Start	100	min. 95,0 cm ³ /1000 strokes		
1.6 Full-load speed regulation	1300	56,0-64,0 cm ³ /1000 strokes		
1.7 Load-dependent start of delivery	--	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	600 1,3-2,1(1,0-2,4)	1000 (3,1-4,5)	1200 4,6-5,4(4,3-5,7)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 3,2-3,8		1250 5,6-6,2
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)		1250 55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1370-1420	0	
	1300	(55,0-65,0)	
	1230	108,5-111,5 (107-113)	
	900	(115-121)	
	700	97,0-101,0 (96,0-102,0)	
	500	92,0-96,0 (90,2-97,8)	
switch-off	1250	0	
Idle stop	520-570		
	500	(13,0-23,0)	
End stop	260		
	380		

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	--
KF	5,4-5,6
MS	0,8-1,0
SVS	4,6-6,0
AK	20,2-22,2
B XL	9,6-12,9

Observations

2.4 Solenoid

max. cut-in voltage
test voltage
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Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 SCA 14,2 d

1. Edition

En

PE 8 P 120 A 920/4 LS 7008 RQV 200-950 PA 547-1

supersedes -

company Scania

engine DSC 1401

Komb.-Nr. 0 402 648 807

Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\begin{matrix} 4,5 - 4,6 \\ (4,45 - 4,65) \end{matrix}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	14,2+0,1	20,1-20,3	0,7(0,9)			3,3±0,1
225	4,6-4,8	1,4-1,8	0,3(0,6)			(3,0-3,5) **

Adjust the fuel delivery from each outlet according to the values in

** Due to smoothing of the sealing edge, the initial spring tension
with a new delivery-valve holder must be adjusted to 3,0 mm.

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	990	15,2-17,8	-	-	-	ca. 9	100	min. 5,9	150	0,5-0,9
ca. 60	13,2 4,0 1250	990-1000 1115-1145 0-1,0					225 310-370 = 2,0	4,4-4,6	420 680 950	3,0-3,5 4,8-5,1 7,4

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)		Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery Idle switching point (6)		Torque-control travel (5)	
rev/min	cm³/1000 strokes	rev/min		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
LDA 700	0,9 bar 201,0-203,0 (198,0-206,0)	990-1000 *		LDA 950 LDA 500	0,9 bar 194,0-202,0 (192,0-206,0) 0 bar 156,0-160,0 (154,0-162,0)	100	250,0-300,0 bei 20,021,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

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D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE 8 P..LS 7008 +RQV..PA 547-1	0,35	0,90 0 0,24	13,6 - 13,7 14,2 - 14,3 11,5 - 11,6 12,1 - 12,3

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

40

VDT-WPP 001/4 MAC 11,0 i 2

1. Edition

En

PES 6 P 110 A 720/3 RS 3036 RQV 300/450-950 PA 375 KR
Komb.-Nr. 0 402 036 713

supersedes -

company: MACK

engine

ETAZ 673 AEXP

Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{2,4-2,5}
(2,35-2,55) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	15,1+0,1	23,1 - 23,3	0,4			
300	5,0-5,2	1,2-2,2	0,4			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	970	16,2-17,8	-	-	-	ca. 18,5	250	9,8-11,3	250	0,2-1,2
ca. 63	14,1 4,0 1200	990-1000 1115-1145 0 - 1,0					300 400 575-635=2,0	7,9-8,1 3,8-5,2 2,0	480 710 950	3,8-4,3 5,5-5,9 8,2

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery idle switching point ⑥	Torque-control travel ⑤		
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
900	230,5-232,5	990-1100 *	725	231,5-234,5	100	110,0-170,0 = ca. 12,0 mm RW	900	15,1
			600	212,5-215,5			725	15,2+0,1
							700	15,0+0,1
							600	max. 14,5
							500	13,9+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

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Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

3.83

F17

①

Test Specifications

Fuel Injection Pumps ①

and Governors

WPP 001/4 VOL 4,5 a

2. Edition

En

PES 4 MW 100/320 RS 1102 RQV 300-1150 MW 39-1

0 403 444 103

supersedes

company:

engine:

11.82

Volvo-BM

TD45

70 kW (95 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,80-2,90 (2,75-2,95) mm (from BDC) RW 9 - 12 mm						
Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm
1	2	3	4	2	3	6
700	11,0+0,1	8,5 - 8,7	0,35 (0,6)			
300	6,4-6,5	1,3 - 1,7	0,35 (0,55)			
1000	11,0+0,1	-	0,55 (0,7)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
		1a			4			3		1
		2a								
max.	1150 1400	15,2-17,8 0 - 1,0				ca. 11	100 300	min. 7,3 5,6-5,7		
ca. 46	10,0 4,0	1190-1200 1230-1260				320-520				
						3a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery		Rotational speed	Fuel delivery characteristics		Starting fuel delivery		Torque-control	
Control-rod stop	Test oil temp. 40°C (104°F)		high idle speed	intermediate speed	idle	switching point	travel	Control rod travel
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	9
700	85,0-87,0 (83,0-89,0)	1190-1200*	1000	88,0-92,0 (86,0-94,0)	100	max. 140,0		
						100-220 (80-250)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.83

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 4,5 d

1. Edition

En

PES 4 MW 100/320 RS 1102
RQV 300-1200 MW 39-2
0 403 444 104

supersedes -

company: Volvo

engine: TD 45

82,5 kW (112 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,80-2,90}{(2,75-2,95)}$ mm (from BDC) RW 9.0 - 12.0

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,0+0,1	9,5 - 9,7	0,35(0,6)			
300	6,5-6,6	1,3 - 1,7	0,35(0,55)			
1000	11,0+0,1		0,55(0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1200 1450	15,2-17,8 0 - 1,0				ca. 12	100 300	min. 8,1 6,5-6,6		
ca. 48	10,0 4,0	1240-1250 1290-1320				③a	400-550 = 2,0			

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery Idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
700	95,0-97,0 (93,0-99,0)	1240-1250*	1000	94,0-98,0 (92,0-100,0)	100	19 - 21 mm RW max. 140		
						100-220 (80-250)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 OMB 4,4 d 1

3. Edition

En

Testoil-ISO 4113

PES 4 A 90 D 410 RS 2195 Z

RSV 325-1050 A 4 B 1079 DL

supersedes 11.74

company: OMB

engine: CO 3

 1 - 3 - 4 - 2
 0 - 90 - 180 - 270

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke (2,10-2,30) mm (from BDC) RW 10,5
 2,15-2,25

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	11,3	7,9 - 8,0	0,3(0,45)			
	+0,1					
325	6,4-6,6	0,9 - 1,5	0,2(0,4)			
600	---	C.Sp. 4-5	0,4(0,55)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				ca. 26	325	6,0	1050	11,3-
	X =	4,5					100	min. 19,0		11,4
							325	6,4-6,6	500	11,3-
ca. 63	1090-1100	10,3					455-515	2,0		11,5
⑤	1135-1145	4,0					575	0 - 1,0	375	11,5-
	1300	0,3-1,7								12,1

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1050	79,5 - 80,5 (77,5 - 82,5)			600	69,5 - 72,5 (67,5 - 74,5)	100	19,0-21,0		

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 PEN7,0 c 1
2. Edition

En

PE6P100A320RS291Z RSV200-1200P1/305R

Komb.-Nr. 0 401 876 264

supersedes 10.82

company: Volvo-Penta

engine: D 70 B/PP

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{2,8-2,9}
(2,75-2,95) mm (from BD) RW 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	8,5-8,6	5,6-5,8	0,3(0,6)			
225	5,8-6,0	1,0-1,4	0,25(0,5)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 22	225	5,4	-	-
	X=5,0						100	min. 20,0		
ca. 64							225	5,8-6,0		
⑤	7,5	1240-1250					335-395	=2,0		
	4,0	1260-1290								
	1400	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min						Control rod travel mm	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	mm 9
700	56,0-58,0 (54,0-60,0)	1240-1250*		-	-	100	210,0-260,0 = 20,0- 21,0mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.83

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 11,4 o

2. Edition

En

Testoil-ISO 4113

PES 6 P 120 A 820 LS 3095 RSV 350-750 P1/487

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067.

supersedes 82

company Daimler-Benz

engine: OM 407 A

169 kW (230 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke $\overset{4,0 - 4,1}{(3,95-4,15)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
730	12,4+0,1	19,6 - 19,8	0,5(0,8)			
350	5,7-5,9	3,0 - 4,0	0,8(0,7)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	700	0,3-1,8	-	-	-	-	-	-	-	-
	x =	2,25								
ca. 33	11,4	745-760								
⑤	4,0	765-795								
	900	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.	③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
rev/min 1	cm ³ /1000 strokes 2	3	4	5	6	7	8	9
730	196,0-198,0 (193,0-201,0)	745-760 *	-	-	100	170,0-190,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications

Fuel Injection Pumps ②

and Governors

WPP 001/4 MB 14,6 g

3. Edition

En

PE 8 P 120 A 320 LS 3807 RQ 300/1150 PA 546

1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je $45^\circ \pm 0,5^\circ (\pm 0,75^\circ)$

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes 10.82

company: Daimler-Benz

engine: OM 422 A

243 kW (330 PS)

Komb.-Nr. 0 401 848 733

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke (3,95-4,15) mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm
1	2	3	4	2	3	6
1150	10,7+0,1	15,7-15,9	0,5(0,9)			
300	5,2-5,4	1,2-1,8	0,8(1,2)			
600	----	C, 1 u. 2	0,7(1,1)			
900/500	----	C, 4 u. 5	0,7(1,1)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
600	19,2-20,8	600	20,0	9,7	1200-1215	300	4,5	100	min.6,0	1150	10,7-10,8
				4,0	1235-1270			300	4,4-4,6	600	11,4-11,5
								340-380	= 2,0	900	10,8-11,0

Torque-control travel on flyweight assembly dimension a =

0,2

mm

Speed regulation: At

1200-1215 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes/mm
1	2	3	4	5	6	7	
LDA 1150	0,7 bar 156,5-158,5 (153,5 - 161,5)	-	LDA 900	0,7 bar 164,0 - 168,0 (161,0 - 171,0)	100	120,0 - 140,0	
LDA 600	0,7 bar 166,0 - 172,0 (163,0 - 175,0)		LDA 500	0 bar 137,0 - 139,0 (134,0 - 142,0)			

Checking values in brackets

4.83

D. Adjustment Test for Manifold Pressure Compensator

MB 14,6 g - 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 8 P..LS 3807 + ..PA 546	0,47	0,70 0 0,40	11,2-11,3 11,4-11,5 10,5-10,6 10,6-10,7

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 IHC 7,6 g

2. Edition

En

PES 6 MW 100/320 RS 1108

RQV 350-1200 MW 43-5

0 403 446 139

DHK 1 688 901 016

207 + 3 bar

supersedes 12.82

company: IHC

engine: DT 466 B

121,4 kW (165 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke		3,00-3,10 (2,95-3,15)		mm (from BDC) PW = 9,0 - 12,0 mm		Spring pre-tensioning (torque-control valve)
Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	
rev/min	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm
1	2	3	4	2	3	6
800	10,5+0,1	8,3-8,5	0,35(0,6)			
350	5,8-5,9	1,6-2,0	0,35(0,55)			
1200	10,5+0,1		0,65(0,7)			
500	9,2-9,3					

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	8,0 0-1	1360-1400 1460	-	-	-	ca. 14	100 350	min. 9,0 5,8-5,9		
ca. 58,5	4,0	1360-1370				360-640				
						③a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed		Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	
LDA 800	0,9 bar 83,0-85,0 (81,0-87,0)		LDA 1200	0,9 bar 88,5-92,5 (86,5-94,5)	100	19-21 mm RW 140-180			
			LDA 500	0 bar 59,0-61,0 (57,0-63,0)	220-280 (210-290)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.83

BOSCH

Geschäftsbereich KH Kundendienst Kfz-Ausrüstung
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G1

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel-diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
RS 1108 † RQV.. MW 43-5	0,9		10,5 - 10,6
		0	9,2 - 9,3
		0,2	9,7 - 9,8
		0,34	10,2 - 10,3

Notes.

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Please note:

- Carry out pump adjustment only with overflow valve 1 417 413 040 and IH hose with throttle 1.57 mm diameter.
- Set locking device before testing position of sliding device.
- In unlocked condition do not operate at a speed higher than $n = 500 \text{ min}^{-1}$.
- Set lower idle speed at stop screw.
- Set shutoff stop 1.5 - 2.0 mm in front of the stop.

Test Specifications Fuel Injection Pumps and Governors

WPP 00 1/4 MB 3,0 m

2. Edition
En

PES 5 MW 55/320 RS 16
RW 375/2200 MW 28-1
0 403 245 013
0 403 245 014 - Sales model

supersedes 2.80
company Daimler Benz
engine OM 617 A

Take note of important instructions on the reverse
before starting test!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,10-2,20 mm (from BDC) 21mm Control rod travel

Without ADA (2,05-2,25)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (compensating valve) mm
1	2	3	4	2	3	6
1000	13,5+0,1	5,15 - 5,25	0,25(0,3)			
375	5,2-5,3	0,6 - 0,7	0,10(0,15)			
1600			0,25(0,3)			
2180			0,25(0,3)			

Set uniform delivery according to the values in

Checking values in brackets

B. Governor Settings

without ADA

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever	Control rod travel mm	Rotational speed rev/min	Degree of deflection of control lever	Control rod travel mm	Rotational speed rev/min		Rotational speed rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
27-31	min. 11 max. 11 5,2-5,3 ** - -	100 320 375 - -	69	12,1-12,3 11,0 4,0 0,0-1,0	2180 2300-2320 2620-2720 2950		100 1600 1000 260-310(240-330)	20,5-21,5 13,1-13,3 13,5-13,6
							Switching point	

C. Settings for Fuel Injection Pump with Governor Mounted

without ADA

Full-load delivery		Full-load speed regulation	Variations in fuel delivery		Starting fuel delivery Idle		Difference
Test oil temp 40°C (104°F)							
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	cm ³ /1000 strokes
1	2	3	4	5	6	7	8
2180	50,0-52,0 (49,0-53,0)	2300-2320* (2290-2330)	1600	51,5-53,0 (50,5-54,5)	100	min. 55,0	6,0
			1000	51,5-52,5 (50,5-53,5)	375	6,0 - 7,0 (5,5 - 9,5)	1,0 (1,5)
					2550	24,0-30,0 (23,0-31,0)	2,5 (3,0)

Checking values in brackets

* 1 mm less control rod travel than in Column 2

Testing with ALDA

MB 3.0 n

Point	min ⁻¹	cm ³ /1000 H	RW	Pressure (absolute)
18	1000	51,5 - 52,5 (50,5 - 53,5)	13,5 - 13,6	1733 mbar(1300 mmHg)
18a	*** 1000	41,0 - 43,0 (40,0 - 44,0)	-	1067 mbar(800 mmHg)
19	2180	50,0 - 52,0 (49,0 - 53,0)	12,1 - 12,3	1733 mbar (1300 mmHg)
12a	100	min. 55	20,5 - 21,5	1733 mbar (1300 mmHg)
15	375	6.0 - 7.0 (5.5 - 9.5)	5,2 - 5,3	987 mbar (740 mmHg)

1. Adjusting the idle

Test supersedes Section 4.1 of test instructions VDT-W-420/300
Suppl. 2, Ed. 2.

Set the control lever to an angle of 69°. Operate the fuel-injection pump at 1000 min⁻¹.

Screw in the spring retainer until a control-rod travel of 13,5 - 13,6 mm is reached.

Set the control lever to an angle of 49°. Operate the fuel-injection pump at 1000 min⁻¹. Control-rod travel 8,8 - 9,5 must be reached.

2. Adjusting the lower rated speed

Text supersedes Section 4.3 of test instructions VDT-W 420/300
Suppl. 2, Ed. 2.

Operate the fuel-injection pump at $n = 800 \text{ min}^{-1}$. Take back the control lever until a control-rod travel of 1.0 - 1.3 mm is reached.

The resulting deflection of the control lever must be within the allowable tolerance. Fix the control lever in this position. Drive the fuel-injection pump at a speed according to Point 2 Section B of the test specification sheet. Set regulation at adjusting screw (28).

3. Adjusting the idle-speed auxiliary spring (70)

- ** Position the idle-speed auxiliary spring in contact as the characteristic curve levels off at $n=520-550 \text{ min}^{-1}$.

4. Adjusting the sensing lever

Place the control lever against the full-load stop.

Operate the fuel-injection pump at $n = 375 \text{ min}^{-1}$. Adjust the sensing lever so that the control-rod travel is 0.1 (0.1 - 0.2) mm above the full-load control-rod travel at $n = 1000^{-1}$.

5. *** Correct the quantity of fuel injected at the correction screw of the ALDA aneroid box. Max. correction $\pm 0.75 \text{ mm}$ control-rod travel.

6. Pin projection = $16.65 \pm 0.1 \text{ mm}$

7. Shutoff check: Operate the fuel-injection pump at $n = 200 \text{ min}^{-1}$. Force the control rod through the spring-loaded idle stop. The resulting control-rod travel must be max. 5 mm.

8. Test the pneumatic shutoff: Control lever in idle position. Operate the fuel-injection pump at $n = 375 \text{ min}^{-1}$. At 450 mbar (338 mmHg) (vacuum) the control rod must move briskly to control-rod travel 0 mm.

9. Control-lever range idle - full load = $38 - 42^{\circ}$.

Test Specifications Fuel Injection Pumps and Governors

PES 5 MW 55/320 RS 16 RW 375/2200 MW 28-3
0 403 245 020
0 403 245 021 - Sales model

supersedes --
company Daimler-Benz
engine OM 617 A-USA
92 kW (125 PS)

Take note of important instructions on the reverse
before starting test!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,10-2,20 mm (from BDC) 21 mm Control rod travel
(2,05-2,25)

Without ADA

Start-of-delivery adjustment and blocking
19,5° after start-of-delivery cylinder 1.

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm
1	2	3	4	2	3	6
1000	13,5+0,1	5,15-5,25	0,25(0,3)			
375	5,2-5,3	0,6-0,7	0,1 (0,15)			
1600			0,25(0,3)			
2180			0,25(0,3)			

Set uniform delivery according to the values in

Checking values in brackets

B. Governor Settings

without ADA

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever	Control rod travel	Rotational speed	Degree of deflection of control lever	Control rod travel	Rotational speed		Rotational speed	Control rod travel
1	mm	rev/min	4	mm	rev/min	7	rev/min	mm
27-3	min. 11	100	69	12,1-12,3	2180		100	20,5-21,5
	max. 11	320					1600	13,1-13,3
	5,2-5,3	375		11,0	2300-2320		1000	13,5-13,6
	**			4,0	2520-2720			
	-	-		0,0-1,0	2950			
	-	-		-	-		Switching point	
							260-310 (240-330)	

C. Settings for Fuel Injection Pump with Governor Mounted

without ADA

Full-load delivery		Full-load speed regulation		Variations in fuel delivery		Starting fuel delivery		Difference
Test oil temp. 40°C (104°F)						Idle		
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	cm ³ /1000 strokes	
1	2	3	4	5	6	7	8	
2180	50,0-52,0 (49,0-53,0)	2300-2320* (2290-2330)	1600	51,5-53,0 (50,5-54,5)	100	min. 55,0	6,0	
			1000	51,5-52,5 (50,5-53,5)	375	6,0-7,0 (5,5-9,5)	1,0	
					2550	24,0-30,0 (23,0-31,0)	(1,5) 2,5 (3,0)	

Checking values in brackets

* 1 mm less control rod travel than in Column 2

Testing with ALDA

MB 3.0 n

Point	min ⁻¹	cm ³ /1000 H	RW	Pressure (absolute)
18	1000	51,5 - 52,5 (50,5 - 53,5)	13,5 - 13,6	1733 mbar(1300 mmHg)
18a	*** 1000	41,0 - 43,0 (40,0 - 44,0)	-	1067 mbar(800 mmHg)
19	2180	50,0 - 52,0 (49,0 - 53,0)	12,1 - 12,3	1733 mbar (1300 mmHg)
12a	100	min. 55	20,5 - 21,5	1733 mbar (1300 mmHg)
15	375	6.0 - 7.0 (5.5 - 9.5)	5,2 - 5,3	987 mbar (740 mmHg)

1. Adjusting the idle

Test supersedes Section 4.1 of test instructions VDT-W-420/300
Suppl. 2, Ed. 2.

Set the control lever to an angle of 69°. Operate the fuel-injection pump at 1000 min⁻¹.

Screw in the spring retainer until a control-rod travel of 13,5 - 13,6 mm is reached.

Set the control lever to an angle of 49°. Operate the fuel-injection pump at 1000 min⁻¹. Control-rod travel 8,8 - 9,5 must be reached.

2. Adjusting the lower rated speed

Text supersedes Section 4.3 of test instructions VDT-W 420/300
Suppl. 2, Ed. 2.

Operate the fuel-injection pump at $n = 800 \text{ min}^{-1}$. Take back the control lever until a control-rod travel of 1.0 - 1.3 mm is reached.

The resulting deflection of the control lever must be within the allowable tolerance. Fix the control lever in this position. Drive the fuel-injection pump at a speed according to Point 2 Section B of the test specification sheet. Set regulation at adjusting screw (28).

3. Adjusting the idle-speed auxiliary spring (70)

- ** Position the idle-speed auxiliary spring in contact as the characteristic curve levels off at $n=520-550 \text{ min}^{-1}$.

4. Adjusting the sensing lever

Place the control lever against the full-load stop. Operate the fuel-injection pump at $n = 375 \text{ min}^{-1}$. Adjust the sensing lever so that the control-rod travel is 0.1 (0.1 - 0.2) mm above the full-load control-rod travel at $n = 1000 \text{ min}^{-1}$.

5. *** Correct the quantity of fuel injected at the correction screw of the ALDA aneroid box. Max. correction $\pm 0.75 \text{ mm}$ control-rod travel.

6. Pin projection = $16.65 \pm 0.1 \text{ mm}$

7. Shutoff check: Operate the fuel-injection pump at $n = 200 \text{ min}^{-1}$. Force the control rod through the spring-loaded idle stop. The resulting control-rod travel must be max. 5 mm.

8. Test the pneumatic shutoff: Control lever in idle position. Operate the fuel-injection pump at $n = 375 \text{ min}^{-1}$. At 450 mbar (338 mmHg) (vacuum) the control rod must move briskly to control-rod travel 0 mm.

9. Control-lever range idle - full load = $38 - 42^\circ$.

Test Specifications Fuel Injection Pumps and Governors

En

PES 5 MW 55/320 RS 16

RW 375/2200 MW 29-1

0 403 245 022

0 403 245 023 - Sales model

Take note of important instructions on the reverse
before starting test!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes

company Daimler-Benz

engine: OM 617A-USA

92 kW (125 PS)

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Start-of-delivery adjustment and blocking
19,5° after start-of-delivery cylinder 1.

Port closing at prestroke 2,10-2,20 mm (from BDC) 21 mm Control rod travel
(2,05-2,25)

Without ADA

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (compensating valve) mm
1	2	3	4	2	3	6
1000	13,5+0,1	5,15-5,25	0,25(0,3)			
375	5,2-5,3	0,6-0,7	0,1 (0,15)			
1600			0,25(0,3)			
2180			0,25(0,3)			

Set uniform delivery according to the values in

Checking values in brackets

B. Governor Settings

without ADA

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever	Control rod travel mm	Rotational speed rev/min	Degree of deflection of control lever	Control rod travel mm	Rotational speed rev/min		Rotational speed rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
27-31	① min.11	100	69	⑦ 12,1-12,3	2180		⑫ 100	min. 55
	② max.11	320		⑧ 11,0	2300-2320		⑬ 1600	13,1-13,3
	③ 5,2-5,3	375		⑨ 4,0	2620-2720		⑭ 1000	13,5-13,6
	④ **			⑩ 0,0-1,0	2950			
	⑤ -	-		⑪ -	-			
							⑮ Switching point 280-310(240-330)	

C. Settings for Fuel Injection Pump with Governor Mounted

without ADA

Full-load delivery ⑮		Full-load speed regulation ⑧a	Variations in fuel delivery ⑮		Starting fuel delivery idle ⑮		Difference
Test oil temp 40°C (104°F)							
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	cm ³ /1000 strokes
1	2	3	4	5	6	7	8
2180	50,0-52,0 (49,0-53,0)	2300-2320* (2290-2330)	1600	51,5-53,0 (50,5-54,5)	100	min. 55,0	6,0 ⑫a
			1000	51,5-52,5 (50,5-53,5)	375	6,0-7,0 (5,5-9,5)	1,0 ⑮
					2550	24,0-30,0 (23,0-31,0)	2,5 ⑮
							3,0 ⑮

Checking values in brackets

* 1 mm less control rod travel than in Column 2

2.83

BOSCH

Geschäftsbereich KH Kundendienst, Kfz-Ausrüstung
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Testing with ALDA

MB 3.0 n

Point	min ⁻¹	cm ³ /1000 H	RW	Pressure (absolute)
18	1000	51,5 - 52,5 (50,5 - 53,5)	13,5 - 13,6	1733 mbar(1300 mmHg)
18a	*** 1000	41,0 - 43,0 (40,0 - 44,0)	-	1067 mbar(800 mmHg)
19	2180	50,0 - 52,0 (49,0 - 53,0)	12,1 - 12,3	1733 mbar (1300 mmHg)
12a	100	min. 55	20,5 - 21,5	1733 mbar (1300 mmHg)
15	375	6.0 - 7.0 (5.5 - 9.5)	5,2 - 5,3	987 mbar (740 mmHg)

1. Adjusting the idle

Test supersedes Section 4.1 of test instructions VDT-W-420/300
Suppl. 2, Ed. 2.

Set the control lever to an angle of 69°. Operate the fuel-injection pump at 1000 min⁻¹.
Screw in the spring retainer until a control-rod travel of 13,5 - 13,6 mm is reached.

Set the control lever to an angle of 49°. Operate the fuel-injection pump at 1000 min⁻¹. Control-rod travel 8,8 - 9,5 must be reached.

2. Adjusting the lower rated speed

Text supersedes Section 4.3 of test instructions VDT-W 420/300
Suppl. 2, Ed. 2.

Operate the fuel-injection pump at $n = 800 \text{ min}^{-1}$. Take back the control lever until a control-rod travel of 1.0 - 1.3 mm is reached.

The resulting deflection of the control lever must be within the allowable tolerance. Fix the control lever in this position. Drive the fuel-injection pump at a speed according to Point 2 Section B of the test specification sheet. Set regulation at adjusting screw (28).

3. Adjusting the idle-speed auxiliary spring (70)

- ** Position the idle-speed auxiliary spring in contact as the characteristic curve levels off at $n=520-550 \text{ min}^{-1}$.

4. Adjusting the sensing lever

Place the control lever against the full-load stop.

Operate the fuel-injection pump at $n = 375 \text{ min}^{-1}$. Adjust the sensing lever so that the control-rod travel is 0.1 (0.1 - 0.2) mm above the full-load control-rod travel at $n = 1000^{-1}$.

5. *** Correct the quantity of fuel injected at the correction screw of the ALDA aneroid box. Max. correction $\pm 0.75 \text{ mm}$ control-rod travel.

6. Pin projection = $16.65 \pm 0.1 \text{ mm}$

7. Shutoff check: Operate the fuel-injection pump at $n = 200 \text{ min}^{-1}$. Force the control rod through the spring-loaded idle stop. The resulting control-rod travel must be max. 5 mm.

8. Test the pneumatic shutoff: Control lever in idle position. Operate the fuel-injection pump at $n = 375 \text{ min}^{-1}$. At 450 mbar (338 mmHg) (vacuum) the control rod must move briskly to control-rod travel 0 mm.

9. Control-lever range idle - full load = $38 - 42^{\circ}$.

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 PEN 10,0 b

5. Edition

En

Testoil-ISO 4113

PE 6 P 100 A 320 RS 101 Z (1) RSV 200-900 P 4/305 R
/ 320 RS 101 (2)

superseded 4.81
company Volvo-Penta
engine TMD 100 A

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,60-2,70$
 $(2,55-2,75)$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery 1 cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery 2 cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	$13,5^{+0,1}$	15,6 - 15,8	0,3(0,6)	$12,7^{+0,1}$	14,5 - 14,7	880
200	5,9-6,1	1,0 - 1,4	0,2(0,4)	5,5-5,7	1,1 - 1,5	200 $2,5 \pm 0,1$ ** (max. 2,2-2,9)

Adjust the fuel delivery from each outlet according to the values in

**In the case of greater dispersion alter the delivery-valve spring pre-tension accordingly.

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0 x = 4,75				ca. 22	200	5,5	880	$13,5^{+0,1}$
ca. 56		940-950=12,5 990-1020=4,0 1100= 0,3-1,7					100 200 255-310	min. 20,0 5,9-6,1 = 2,0	340 240	$13,5^{+0,3}$ $14,7^{+0,9}$

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104°F)		Note: changed to .)							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
700	156,0 - 158,0 (154,0 - 160,0)	940-950*				100	20 - 21 220 - 250 11 - 15**		
						200			

Checking values in brackets

* 1 mm less control rod travel than col 2

4.83

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B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0				ca. 22	200	5,1		
	x = 4,75						100	min. 20,0		
ca. 55	940-950 = 11,7						200	5,5-5,7		
	990-1020 = 4,0						260-310	= 2,0		
2a	1100=0,3-1,7									

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp. 40°C (104°F)		6 Rotational-speed limitat. Note: changed to ... rev/min		3a Fuel delivery characteristics rev/min cm ³ /1000 strokes		Starting fuel delivery Idle 5 rev/min cm ³ /1000 strokes		4a Idle stop rev/min Control rod travel mm	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
880	145,0 - 147,0 (143,0 - 149,0)	940-950*				100	220 -250 = 20,0 - 21,0 mm RW		

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = rev/min decreasing pressure – in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)

Notes:

(1) when $n =$

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

En

Test specifications

Fuel injection pumps and governors

WPP 001/4 MTU 47,5 a

3. Edition

En

PE 12 ZWM 160/120 RS 2002 RQUV 300-1050 ZWA 65 R

1- 2- 9- 4 - 5 - 8 - 11- 2 - 3 - 10- 7 - 6
 0-45-60-105-120-165-180-225-240-285-300-345 ° $\pm 0,5^\circ$ ($\pm 0,75^\circ$)

Replaces

Firm: 3.82

Engine: MTU

12 V 396-03

1440 kW

Komb.-Nr. 0 406 030 002

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings

Cylinder 12 - control rod in center position

Port closing at prestroke

mm (from BDC)

Rotational speed min ⁻¹	Control-rod travel mm	Fuel delivery Average value cm ³ /1000 strokes	Difference in fuel delivery cm ³ /1000 strokes	Fuel delivery Checking values cm ³ /1000 strokes	Spring pre-tension (torque-control valve)
1	2	3	4	5	
1000	18,0-0,1	622,0-636,0	20,0 (30,0)	619,0-639,0	
1000	9,0-9,1	220,0-248,0	28,0 (42,0)	215,0-253,0	
300	9,0-9,1	104,0-128,0	16,0 (24,0)	99,0-133,0	

Adjust the fuel delivery from each outlet according to the values in

B. Governor settings

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees	mm	Control-rod travel mm	Control lever deflection degrees	min ⁻¹	Control-rod travel mm	Control lever deflection degrees	min ⁻¹	Control-rod travel mm	min ⁻¹	Control-rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 82	1050	18,0	ca. 27	375	8,0	ca. 21	300	8,0	-	-
	17,0	1055-1075		200	14,3-17,2		200	10,8-14,2		
	4,0	1150-1210		300	10,3-11,8		400	3,9-5,0		
	1250	0 - 2,0		500	1,9-3,7		485-590	= 0		
				590-720	= 0					

Torque control travel dimension a = mm

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed	Fuel-delivery characteristics		Starting fuel delivery	
min ⁻¹	cm ³ /1000 strokes	min ⁻¹	min ⁻¹	cm ³ /1000 strokes	min ⁻¹	cm ³ /1000 strokes
1	2	3	4	5	6	7
Not known. Carry out adjustment on engine.						

Checking values in brackets

4.83

Testoil-ISO 4113

Test specifications

Fuel injection pumps and governors

WPP 001/4 MTU 23,7 a

1. Edition

En

PE 6 ZWM 160/120 BS 2004 RQUV 300-1050 ZWA 65 R

Komb.-Nr. 0 406 036 034

1- 2- 3 - 4 - 5 - 6

0-45-120-165-240-325 ° \pm 0,50 (\pm 0,75 °)

Replaces

Firm: -

Engine: MTU
396-03
720 kW

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings

Port closing at prestroke ^{2,5-2,6}
(2,45-2,65) mm (from BDC)

Rotational speed min ⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm ³ /1000 strokes 3	Difference in fuel delivery cm ³ /1000 strokes 4	Fuel delivery Checking values cm ³ /1000 strokes 5	Spring pre-tension (torque-control valve)
1000	18,0 \pm 0,1	622,0-636,0	20,0 (30,0)	619,0-639,0	
1000	9,0-9,1	220,0-248,0	28,0 (42,0)	215,0-253,0	
300	9,0-9,1	104,0-128,0	16,0 (24,0)	99,0-133,0	

Adjust the fuel delivery from each outlet according to the values in

B. Governor settings

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees 1	mm min ⁻¹ 2	Control-rod travel mm min ⁻¹ 3	Control lever deflection degrees 4	mm min ⁻¹ 5	Control-rod travel mm min ⁻¹ 6	Control lever deflection degrees 7	mm min ⁻¹ 8	Control-rod travel mm min ⁻¹ 9	mm min ⁻¹ 10	Control-rod travel mm min ⁻¹ 11
ca. 82	1050	18,0	ca. 27	375	8,0	ca. 21	300	8,0	-	-
	17,0 4,0 1250	1055-1075 1150-1210 0 - 2,0		200 300 500 590-720 = 0	14,3-17,2 10,3-11,8 1,9-3,7		200 400 485-590 = 0	10,8-14,2 3,9-5,0		

Torque control travel dimension a = mm

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed	Fuel-delivery characteristics		Starting fuel delivery	
min ⁻¹ 1	cm ³ /1000 strokes 2	min ⁻¹ 3	min ⁻¹ 4	cm ³ /1000 strokes 5	min ⁻¹ 6	cm ³ /1000 strokes 7
Not known. Carry out adjustment on engine.						

Checking values in brackets

4.83

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps (1A) and Governors

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WPP 001/4 HAN 10,8 a 1

7. Edition

En

Testoil-ISO 4113

PE 6 A 95 D 320 RS 2364 EP/RSV 350-1100 A8 B1070R
RS 2557 A8 B1127R

supersedes 8.82
company MF-Hanomag
engine D 963 A1

** Test cold-start device according to VDT-I-DAF 002, page 2!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 mm (from BDC)
(2,10-2,30)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
		2364			2557	
1	2	3	4	2	3	6
1100	13,5	13,5 - 13,8	0,3 (0,6)	13,2	12,4 - 12,5	n 1100
	+0,1			+0,1		
350	6,7-6,9	1,4 - 2,0	0,3 (0,5)	6,6-6,8	1,4 - 2,0	n 350
500	- - - -	C, 4-5	0,4 (0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0				ca. 24	350	5,5	480	13,5-13,6
	x =	5,5					100	min. 19		
							350	5,9-6,1	400	13,8-14,2
ca. 57	12,5	1140-1150					435-495	2,0		
2a	4,0	1205-1235					600	0 - 1		
	1380	0,3 - 1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to) rev/min				Idle			
rev/min	cm ³ /1000 strokes			rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
1100	134,0 - 136,0 (132,0 - 138,0)	1140-1150*		500	131,0 - 134,0 (129,0 - 136,0)	100	20-20,5 mm RW **		

Checking values in brackets

* 1 mm less control rod travel than col 2

4.83

G16

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B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0 x = 5,5				ca. 19	350	62	1100	13,2-13,3
							100	min. 19,5	450	13,2-13,4
ca. 50	12,2 = 1140-1150	4,0 = 1220-1250					350	6,6-6,8	400	13,5-13,9
							470-530	0 = 2,0		
2a		1370 = 0,3-1,7								

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limitat.		3a Fuel delivery characteristics		Starting fuel delivery 5 Idle		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	
1100	124,0 - 125,0 (122,0 - 127,0)	1140-1150*	500	121,0 - 124,0 (119,0 - 126,0)	100	20-20,5 mm RW**			

Checking values in brackets

* 1 mm less control rod travel than col. 2

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
2a										

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limitat.		3a Fuel delivery characteristics		Starting fuel delivery 5 Idle		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MB 11,8 e

6. Edition

En

Testoil-ISO 4113

PE 6 P 100 A 720 RS 15

RQ 250/1100 PA 269 R
PA 278 R *

supersedes 1Q.82

company: Daimler-Benz

engine: OM 355

1 - 5 - 3 - 6, 2 - 4 je 60°

Komb.-Nr. 0 401 846 329

* 278 R - Functional check of roll-start block: Adjust solenoid until control rod is 1,5...2,5 mm from stop.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

(2,75-2,75)
2,80-2,90

mm (from BDC) RW 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	13,0+0,1	11,8 - 12,0	0,3(0,6)			
250	7,4-7,6	1,70 - 2,30	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3				Idle speed regulation Setting point rev/min 7				Torque control rev/min 11	
Control rod travel mm 2		Control rod travel mm 4		Test specifications Control rod travel mm 5		Control rod travel mm 8		Test specifications Control rod travel mm 10		Control rod travel mm 12	
600	15,6-16,4	600	16,0	12,0	1125-1145	250	6,0	100	min.7,5		
1350	0 - 1			4,0	1195-1230			250	5,9-6,1		
								385-425	=2,0		

Torque-control travel
on flyweight assembly dimension a =

mm

Speed regulation: At 1125-1145 min⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes/mm 7	
1100	118,5-120,5 (116,5-122,5)	450		450	101,0 - 105,0 (99,0 - 107,0)	100	14 0-16 0

Checking values in brackets

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 DAF 6,2 m

5. Edition

En

Testoil-ISO 4113

PE 6 A 85 D 320 RS 2546 RSV 250-750 A 7 B 2125 R
Komb.-Nr. 0 400 676 168

supersede 9.82

company DAF

engine: DD 575 DF

Specifications apply to test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers.
Port closing difference between control-rod travel 9 and max. = 3,0-4,0°.

A. Fuel Injection Pump Settings

Port closing at prestroke (2,1 - 2,3) mm (from BDC) RW = 9 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	12,1+0,1	6,0 - 6,2	0,3(0,45)			
250	8,4-8,6	0,8 - 1,4	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3 - 1,0	-	-	-	ca. 16	250	8,5	750	12,1+0,1
	x = 4,5								700	12,1+0,3
⑤ ca. 40	11,1	770-780					250	**		
	4,0	795-815					260-320	=2,0 mm		
	955	0,3-1,7								

Set idle-speed auxiliary spring at 2,0 mm control-rod travel,

** then 1/2 turn back.

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min						Control rod travel mm	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	mm 9
750	60,5 - 62,5 (58,5 - 64,5)	770-780*	-	-	-	100	19,5-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.83

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①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 7,0 a 1

1. Edition

En

PE 6 P 100/320 RS 169 Z
(A)RQV 200-1200 PA 122/2 R
RQV 250-1200 PA 235/2 Rsupersedes
company Volvo
engine TD 70

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,8-2,9}{(2,75-2,95)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,0	10,4-11,1	0,5			2,5 \pm 0,1 (max.2,2-2,9)
600	9,0	3,3-4,3				
600	12,0	9,8-11,2				
600	15,0	14,9-16,5				
200	9,0	2,3-3,3				

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

..PA 122/2 R

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
ca. 68	1290	15,0-18,0	-	-	-	ca.23	200	8,6-10,0	1290	8,3
	1550	0					300	6,4-8,8		
ca. 66	1200	15,0-17,8					400	2,9-5,4		
	1300	7,7-12,6					500	0,7-2,7		
	1400	0 - 7,6					590	0		
	1500	0				3a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed ②b limitation intermediate speed	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery Idle switching point ⑥		Torque-control ⑤ travel	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA	0,7 bar	1230-1240*	LDA	0 bar	100	150,0-180,0	-	-
700	70,0-72,0 (69,0-73,0)		700	59,5-62,5 (58,5-63,5)	200	11,0-15,0		
					Dispersion max. 2,5			

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.83

B. Governor Settings

..PA 235/2 R

VOL 7,0 a 1

- 2 -

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca. 50	1290	15,0-18,4	-	-	-	ca. 13	100	8,9-11,0	1290	8,3
	1560	0					200	7,0-10,0		
ca. 45	1200	15,0-18,2					300	3,8-6,8		
	1300	8,1-13,2					380	0 - 4,0		
	1400	0 - 7,4					510	0		
	1510	0				(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 700	0,7 bar 70,0-72,0 (69,0-73,0)	1230-1240*	LDA 700	0 bar 59,5-62,5 (58,5-63,5)	100	150,0-180,0	-	
					200	11,0-15,0		
					Dispersion max. 2,5			

Checking values in brackets

* 1 mm less control rod travel than co: 2

Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure increasing

Pump/governor	Setting	Measurement	Control rod travel-diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm
PE 6 P..PS 169 Z + RQV..PA 122/2 R bzw. + RQV..PA 235/2 R	0,11-0,14	0,05-0,11	

En

①

Test Specifications Fuel Injection Pumps ① and Governors

NPP 001/4 VOL 7,0 a 3

1. Edition

En

PE 6 P 100/320 RS 169 Y
(A)RQV 200-1200 PA 122/2 R
RQV 250-1200 PA 235/2 Rsupersedes
company Volvo
engine: TD 70

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,8-2,9$
(2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,0	10,4-11,1	0,5			$2,5 \pm 0,1$ (max. 2,2-2,9)
600	9,0	3,3-4,3				
600	12,0	9,8-11,2				
600	15,0	14,9-16,5				
200	9,0	2,3-3,3				

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

.. PA 122/2 R

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
ca. 68	1290	15,0-18,0	-	-	-	ca. 23	200	8,6-10,0	1290	8,3
	1550	0					300	6,4-8,8		
ca. 66	1200	15,0-17,8					400	2,9-5,4		
	1300	7,7-12,6					500	0,7-2,7		
	1400	0 - 7,6					590	0		
	1500	0				3a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed ②b intermediate speed 4a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA	0,7 bar	1230-1240*	LDA	0 bar	100	150,0-180,0	-	-
700	100,0-102,0 (99,0-103,0)		700	67,5-70,5 (66,5-71,5)	200	11,0-15,0		
Dispersion max. 2,5								

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.83

Testoil-ISO 4113

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G22

G22

B. Governor Settings

.. PA 235/2 R

VOL 7,0 a 3

- 2 -

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca. 50	1290	15,0-18,4	-	-	-	ca.13	100	8,9-11,0	1290	8,3
	1560	0					200	7,0-10,0		
ca. 45	1200	15,0-18,2					300	3,8-6,8		
	1300	8,1-13,2					380	0 - 4,0		
	1400	0 - 7,4					510	0		
	1510	0				(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed	Starting fuel delivery idle switching point	Torque-control travel
rev/min	cm ³ /1000 strokes	rev/min	rev/min	rev/min	rev/min
1	2	3	4	6	8
LDA	0,7 bar	1230-1240 *	LDA	100	150,0-180,0
700	100,0-102,0 (99,0-103,0)		700	200	11,0-15,0
					Dispersion max. 2,5

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel-diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm
PE 6 P .. RS 169 Y + RQV.. PA 122/2 R bzw. RQV..PA 235/2 R	0,37-0,40	0,12-0,18	

En

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 11,0 q

2. Edition

En

PE 6 P 120 A 320 LS 3815 RSV 650-1150 P1/820R

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067.

supersedes 10.82

company: Daimler-Benz

engine: OM 421 A

206 kW (280 PS)

Komb.-Nr. 0 401 876 722

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke $4,0 - 4,1$ mm (from BDC)
(3,95-4,15)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm
1	2	3	4	2	3	6
1130	12,0+0,1	18,4 - 18,6	0,5(0,9)			
650	3,5-3,7	1,8 - 2,4	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca.30	650	4,2	-	-
	X =	3,0					650	4,1-4,3		
⑤ ca.54	11,0	1160-1170					655-715	= 2,0		
	4,0	1185-1215						**		
	1300	0,3-1,7								

** Set auxiliary idle spring at 2.0 mm control-rod travel.

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min						Control rod travel mm	
rev/min	cm ³ /1000 strokes	3	rev/min	cm ³ /1000 strokes	5	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2		4			6	7	8	9
1130	184,0-186,0 (181,0-189,0)	1160-1170*	-	-	-	100	190,0-210,0		

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.83

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 FIA 13,8 a 6

1. Edition

En

PE 6 P 120 A 720 RS 167

RQ 225/1100 PA 323 R

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067.

supersedes -

company: Fiat
221 Aengine:
Komb.-Nr. 0 401 846 356

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke $\begin{matrix} 2,0 - 2,1 \\ (1,95 - 2,15) \end{matrix}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,1+0,1	17,0-17,3	0,5(0,8)			
225	7,5-7,7	1,7-2,3	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
rev/min 1	Control rod travel mm 2	Setting point rev/min 3	Control rod travel mm 4	Test specifications Control rod travel mm 5	rev/min 6	Setting point rev/min 7	Control rod travel mm 8	Test specifications rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
550	15,6-16,4	550	16,0	10,1 4,0 1350	1145-1160 1190-1220 0-1,0	225	7,6	100 225 365-405 = 2,0	min. 9,1 7,5-7,7	1100 550	11,1-11,2 11,1-11,3

Torque-control travel on flyweight assembly dimension a = mm Speed regulation: At 1145-1160 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes/mm 7
1100	170,0-173,0 (167,0-176,0)	-	-	-	100	19,5-21,0 mm RW

Checking values in brackets

3.83

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H1

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 FIA 13,8 a 1

4. Edition

En

PE 6 P 120 A 720 RS 167 RQV 225-1100 PA 177 R

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

supersedes

company Fiat

engine:

Komb.-Nr. 0 401 846 245

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,0}{1,95} - \frac{2,1}{2,15}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,1+0,1	17,0-17,3	0,5 (0,9)			
225	7,5-7,6	1,7-2,3	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1100	15,2-17,8	-	-	-	ca. 10	100	min. 7,5	200	0,6-0,9
ca. 60	10,1	1140-1150					225	5,9-6,1	500	2,7-3,0
	4,0	1200-1230					295-410	= 2,0	800	4,7-4,9
	1350	0-1,0							1100	7,9

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery idle switching point		Torque-control travel	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1100	170,0-173,0 (167,0-175,0)	1140-1150*	-	-	100	19,0-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.83

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H2

H2

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 DEE 7,6 b

1. Edition

En

PES 6 A 100 D 410 RS 3034 RSV 600-1100 A 2 B 2080 L
Komb.-Nr. 0 401 276 049

supersedes -
company John Deere
engine 6.466 AZ-01
152 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,95-2,05 mm (from BDC)
(1,90-2,10)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,2+0,1	13,5-13,7	0,3			
600	4,8-5,0	1,3-1,7	0,3			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 19	600	4,4	-	-
ca. 37	11,2	1145-1155					100	min. 19,0		
2a	4,0	1195-1225					600	4,8-5,0		
	1250	0,3-1,7					620-680	= 2,0		
							800	max. 1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min				Idle			
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1100	0,7 bar 134,5-136,5 (133,0-138,0)	1145-1155*		LDA 500	0 bar 68,5-71,5 (67,0-73,0)	100	170,0-195,0 = 19,0- 21,0 mm RM	600	4,9

Checking values in brackets

* 1 mm less control rod travel than col 2

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4.83

D. Adjustment Test for Manifold Pressure Compensator

DEE 7,6 b

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel-diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 6 A ..RS 3034 +RSV..A 2 B 2080L	0,29	0,13	2,65-2,75 0,7-1,1

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

②

Test Specifications Fuel Injection Pumps ② and Governors

40

VDT-WPP 001/4 MAC 11,0 s

1. Edition

En

PES 6 P 110 A 720/3 RS 356 RQ 300/900 PA 396 R
Komb.-Nr. 0 402 036 036 PLE-Maß = 0,740" - 0,820"
Note VDT-I-MAC 002!

supersedes -
company MACK
engine ET 673 A

Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm
1	2	3	4	2	3	6
900	12,3±0,1	16,7 - 16,9	0,4			
300	6,0 6,2	0,7 - 1,7	0,4			

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
950	10,8-14,1	950	12,5	1000 1050 1070	0,4-7,8 0 - 1,0 0	300	5,5	100 300 400 900 950 980	9,8-11,2 5,4-5,7 1,4-2,0 1,4-2,0 0 - 1,4 0	-	-

Torque-control travel on flyweight assembly dimension a =

mm

Speed regulation At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a	③b		⑥	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes/mm
1	2	3	4	5	6	7
900	167,0-169,0	-	600	163,5 - 166,5	100	110,0-170,0
			300	PLE 108,0 - 116,0	High idle speed 995	34,0 - 37,0

Checking values in brackets

3.83

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H5

①

Test Specifications Fuel Injection Pumps ① and Governors

40

VDT-WPP 001/4 MAC 11,0 x 7

1. Edition

En

US-PES 6 P 110 A 720 RS 6006

US-RQV 300/600-1050 PA 593-1K

supersedes

Komb.-Nr. 9 400 231 153

PLE-Maß = 0,740" - 0,820"

company:

MACK

Note VDT-I-MAC 002!

Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

engine

EM 6 - 225

225 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{3,2-3,3}{(3,15-3,35)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	10,5+0,1	16,1 - 16,3	0,4			
300	5,2-5,4	2,1 - 3,1	0,4			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1120	15,2-17,8	-	-	-	ca. 20	250	9,8-11,3	-	-
ca. 59	9,5 4,0 1225	1090-1100 1165-1195 0 - 1,0				③a	300 400 695-755	7,9-8,1 3,8-5,2 =2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed limitation intermediate speed ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1050	161,0-163,0	1090-1100 *	850	162,5-165,5	100	120,0-180,0	1050	10,5
			630	180,0-183,0			950	10,5+0,1
				PLE			850	10,6+0,1
			800	150,0-158,0			750	10,9+0,1
							630	11,3+0,1
							500	10,9+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

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①

Test Specifications Fuel Injection Pumps ① and Governors

40

VDT-WPP 001/4 MAC 11,0 x 2

1. Edition

En

US-PES 6 P 110 A 720 RS 6006 US-RQV 300/600-1050 PA 587-2K
Komb.-Nr. 9 400 231 141 PLE-Maß = 0,740" - 0,820"

supersedes

company:

MACK

EM 6 - 237

224 PS

Note VDT-I-MAC 002!

Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2-3,3 mm (from BDC)
(3,15-3,35)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,3+0,1	17,6 - 17,8	0,4			
300	5,2-5,4	1.1 - 2,1	0,4			

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1125	15,2-17,8	-	-	-	ca. 21	250	9,5-11,0	-	-
ca. 61	11,3 4,0 1230	1090-1100 1170-1200 0 - 1,0				3a	300 400 700-760 = 2,0	7,9-8,1 3,8-5,2 2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1000	175,5-177,5	1090-1100 *	800	180,5-183,5	100	110,0-170,0	1050	12,3+0,1
			600	199,0-202,0			1000	12,3
			PLE				800	12,7+0,1
			800	103,0-111,0			700	13,0+0,1
							600	13,5+0,1
							500	13,1+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.83

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Test Specifications Fuel Injection Pumps ① and Governors

US-PES 6 P 110 A 720 RS 6009-1
Komb.-Nr. 9 400 231 143

US-RQV 300/600-1050 PA 543-1K
PLE-Maß = 0,740" - 0,820"

supersedes -

company:

MACK

Note VDT-I-MAC 002!

engine:

E 6 - 250

Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

250 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{3,2-3,3}
(3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,4±0,1	16,9 - 17,1	0,4			
300	6,4-6,6	1,1 - 2,1	0,4			

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1125	15,2-17,8	-	-	-	ca. 20,5	250	9,5-11,0	-	-
ca. 61	11,4 4,0 1235	1090-1100 1180-1210 0 - 1,0						300 7,9-8,1 400 3,9-5,3 700-760=2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed ②b intermediate speed rev/min ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min cm ³ /1000 strokes		Starting fuel delivery idle switching point ⑥ rev/min cm ³ /1000 strokes		Torque-control travel ⑤ rev/min Control rod travel mm	
1	2	3	4	5	6	7	8	9
1000	169,0-171,0	1090-1100 *	750	169,5-172,5	100	110,0-170,0	1050	12,4±0,1
			650	155,5-158,5			1000	12,4
			800	103,0-111,0			900	12,3±0,1
				PLE			750	12,3±0,1
							650	11,8±0,1
							500	11,2±0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

①

Test Specifications Fuel Injection Pumps ① and Governors

40

VDT-WPP 001/4 MAC 11,0 v 1

1. Edition

En

US-PES 6 P 110 A 720 RS 6006 US-RQV 300/400-850 PA 623-K
Komb.-Nr. 9 400 231 139 PLE-Maß = 0,740" - 0,820"

supersedes -

company: MACK

engine: EM 6 250 R

250 PS

Note VDT-I-MAC 002!

Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{3,2-3,3} (3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	11,7+0,1	18,5 - 18,7	0,4			
300	4,5-4,7	1,2 - 2,2	0,4			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	925	15,2-17,8	-	-	-	ca. 21,5	250	8,0-9,4	-	-
ca. 59	10,7 4,0 1080	890-900 990-1020 0 - 1,0					300 400 510-570=2,0	7,9-8,0 3,8-5,2		
						3a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b		Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	④a	rev/min 4	cm ³ /1000 strokes 5b	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
850	185,0-187,0	890-900 *		700	195,5-198,5	100	110,0-170,0	850	11,7
				630	205,5-208,5			800	11,8+0,1
				PLE				700	12,2+0,1
				800	147,0-155,0			630	12,5+0,1
								500	11,9+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.83

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Testoil-ISO 4113

H9

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAC 10,9 b

1. Edition

En

PES 6 P 110 A 720/3 RS 6001

RQV 300/450-950 PA 408 KR

supersedes -

Komb.-Nr. 0 402 736 631

PLE-Maß = 0,740" - 0,820"

company: MACK

Note VDT-I-MAC 002!

engine: ETAZ 673 A DOM

Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015315 PS/1900 min⁻¹

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,4-2,5}{(2,35-2,55)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	15,1+0,1	23,3 - 23,5	0,4			
300	5,0-5,2	1,5 - 2,5	0,4			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	970	16,2-17,8	-	-	-	ca. 18,5	250	9,8-11,3	250	0,2-1,2
ca. 63	14,1 4,0 1200	990-1000 1115-1145 0 - 1,0				③a	300 400 575-635	7,9-8,1 3,8-5,2 =2,0	450 700 950	3,7-4,1 5,4-5,8 8,2

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
900	233,0-235,0	990-1000*	725 600	233,5-236,5 215,5-218,5	100	120,0-180,0	950 900 725 700 600 500	15,0 15,1 15,2+0,1 15,0+0,1 max. 14,5 13,9+0,1
			300	PLE 101,0-109,0				

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 11,0 i 8

1. Edition

En

PES 6 P 110 A 720/3 RS 3036 US-RQV 300/450-950 PA 531K

Komb.-Nr. 9 400 231 053

PLE-Maß = 0,740" - 0,820"

supersedes -

company:

Mack

Note VDT-I-MAC 002!

engine:

ETSZ 673 A

Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

315 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,4 - 2,5$
(2,35-2,55) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	14,7+0,1	22,7-22,9	0,4			
300	4,8-5,0	1,2- 2,2	0,4			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1020	15,2-17,8	-	-	-	ca. 20	250	9,5-11,0	-	-
ca. 52	13,7 4,0 1200	990-1000 1110-1140 0- 1,0				3a	300 400 570-630 = 2,0	7,9- 8,1 3,5- 4,9		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (4a)	Fuel delivery characteristics (5a) high idle speed (5b)		Starting fuel delivery Idle switching point (6)		Torque-control travel (5)	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
900	227,0-229,0	990-1000*	725	231,0-234,0	100	110,0-170,0	950	14,6+0,1
			650	218,0-221,0 PLE			900	14,7
			300	105,5-113,5			800	14,9+0,1
							725	14,9+0,1
							650	14,3+0,1
							500	13,3+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 11,0 y

1. Edition

En

US-PES 6 P 110 A 720/3 RS 6003

Komb.-Nr. 9 400 231 105

Note VDT-I-MAC 002!

Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

US-RQV 300/400-850 PA 623K supersedes

PLE-Maß = 0,740"-0,820"

company:

Mack

engine:

EM 6 250 R

250 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\begin{matrix} 3,2 - 3,3 \\ (3,15-3,35) \end{matrix}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	11,7+0,1	18,5-18,7	0,4			
300	4,5-4,7	1,2 - 2,2	0,4			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	925	15,2-17,8				ca. 21,5	250	8,0-9,4		
ca. 59	10,7 4,0 1080	890 - 900 990 - 1020 0 - 1,0				3a	300 400 510-570	7,9-8,0 3,8-5,2 =2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5) Control rod travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	9
850	185,0-187,0	890-900*	700	193,0-196,0	100	110,0-170,0	850	11,7
			630	200,5-203,5 PLE			800	11,8+0,1
							700	12,2+0,1
							630	12,5+0,1
			500	148,0-156,0			500	11,9+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.83

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Testoil-ISO 4113

①

Test Specifications Fuel Injection Pumps and Governors

40

① WPP 001/4 MAC 11,0 n

1. Edition

En

PES 6 P 110 A 720 RS 3024 RQV 300/600-1050 PA 326 KR (1)

... A 720 RS 3024 RQV 300/450- 950 PA 332 KR (2)

326KR = Maß PLE - 490- 547 inch.

332KR = Maß PLE - 490- .570 inch.

Note VDT-I-MAC 002!

Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes -

company:

MACK

ETA 676 (285 HP-1)

engine:

ETAZ673A(315 HP-2)

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	15,1+0,1	23,1 - 23,3	0,4			
300	5,0	1,3 - 2,1				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

-326 KR (1)

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
ca. 68	1070 1150 1200 1280	15,5-18,0 6,0-11,0 0 - 6,8 0	-	-	-	ca. 19	250 350 500 700 830	9,8-11,3 4,6- 6,2 2,5- 5,0 0,3- 2,0 0	300 400- 900 1070	0,6-1,8 600 = 3,1-3,6 5,8-6,2 8,2

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2		Rotational-speed limitation intermediate speed 4a	Fuel delivery characteristics high idle speed 5b		Starting fuel delivery Idle switching point 6		Torque-control travel Control rod travel 5	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	mm 9
1050	206,0-208,0	1090-1100*	600	224,0-230,0	275	140,0-170,0	1050	14,0
			PLE		300	14,0- 24,0	800	14,3
			300	129 -139			600	15,0
							500	14,5

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.83

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4A3

B. Governor Settings

332 KR (2)

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca. 68	970	15,5-18,0	-	-	-	ca. 19	250	9,8-11,3	300	1,4-2,4
	1050	7,0-11,6					350	3,2-4,8	450	3,5-4,3
	1100	1,7-7,8					500	2,6-4,0	800	6,0-6,5
	1200	0					760	0	990	8,3
						3a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
900	230,5-232,5	990-1000*	725	231,5-234,5	100	140,0-170,0	950	14,9
			600	212,5-215,5	300	14,0-24,0	725	15,1
			PLE				500	13,6
			300	102,0-110,0				

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113**B. Governor Settings**

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
						3a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9

Checking values in brackets

* 1 mm less control rod travel than col 2

Test specifications

Fuel injection pumps and governors

WPP 001/4 MTU 59,2 a

1. Edition

En

PE 6 ZW 140/400 RS 27/2, 53/2

PE 6 ZW 140/410/3 RS 28/2, 54/2 RQUV 300-750 ZW 31

Replaces

Firm: MTU

Engine: MMB 820

Please note instructions on sheet 2

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings

Port closing at prestroke 2,0-2,1

mm (from BDC) γ 1. 6

Rotational speed min^{-1} 1	Control-rod travel mm 2	Fuel delivery Average value $\text{cm}^3/1000$ strokes 3	Difference in fuel delivery $\text{cm}^3/1000$ strokes 4	Fuel delivery Checking values $\text{cm}^3/1000$ strokes 5	Spring pre-tension (torque-control valve)
600	18,0+0,1	491,0-501,0	16,0		
600	4,0-4,2	70,0-90,0	12,0		
250	4,0-4,2	23,0-43,0	12,0		

Adjust the fuel delivery from each outlet according to the values in

B. Governor settings

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees 1	min^{-1} 2	Control-rod travel mm 3	Control lever deflection degrees 4	min^{-1} 5	Control-rod travel mm 6	Control lever deflection degrees 7	min^{-1} 8	Control-rod travel mm 9	min^{-1} 10	Control-rod travel mm 11
ca. 85	750 775 800 840 865	21,5-23,5 13,0-18,0 5,0-12,0 0-3,0 0	-	-	-	ca. 19	270 300 325 350 400 540	11,0-13,0 7,6-8,0 5,0-6,2 4,8 3,3-4,3 0	-	-

Torque control travel dimension a = mm

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed	Fuel-delivery characteristics		Starting fuel delivery	
min^{-1} 1	$\text{cm}^3/1000$ strokes 2	min^{-1} 3	min^{-1} 4	$\text{cm}^3/1000$ strokes 5	min^{-1} 6	$\text{cm}^3/1000$ strokes 7
750	21 mm RW	-	-	-	-	-

Checking values in brackets

2.83

Testoil-ISO 4113

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Pump

With these pumps the customer also requests that the stop and full load limits of the control-rod projection be stamped on the pump housing at control-rod travel 0 mm.

These dimensions, which must be stamped in, can be calculated as follows:

Mark control-rod travel 18 mm (setting point of the pump) with insertion device. Calculate the projection of the control rod front end on pump side 2. Deduct 18 mm from the dimension calculated. Calculate the projection of the control rod with forked piece fitted on pump side 1. Add 18 mm to this dimension. Stamp these dimensions on the front of the pump housing above the spring chamber cover (with plunger-and-barrel assembly 1 the dimension of pump side 1 and with plunger-and-barrel assembly 6 that of pump side 2). Size of figures approx. 5 - 6 mm.

After the insertion device has been removed the 0-dimension calculated on pump side 2 must be reached or not reached in the stop position of the control rod.

On pumps with governor ascertain only the dimension on the drive end and stamp this on the housing.

Governor

The lower idle spring must be positioned between its spring seats, and if necessary also the middle spring must be positioned under the outer spring seat, so that the governor specifications are reached.

Test specifications

Fuel injection pumps and governors

En

WPP 001/4 MTU 26,5 a

1. Edition

PE8ZWM 160/120 RS 1032/11 RQUV300-120U ZWA 51 R

1-2-6-3-4-5-7-8 je $45^\circ \pm 0,5^\circ$ ($\pm 0,75^\circ$)

Replaces

Firm: MTU

Engine: 8 V 331

Hydrfoil

Komb. -Nr.

0 406 038 022

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings

Port closing at prestroke 2,5-2,6 mm (from BDC) Zyl. 8

Rotational speed min ⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm ³ /1000 strokes 3	Difference in fuel delivery cm ³ /1000 strokes 4	Fuel delivery Checking values cm ³ /1000 strokes 5	Spring pre-tension (torque-control valve)
600	18,0+0,1	513,0-523,0	16,0(24,0)	510,0-526,0	
600	9,0+0,1	140,0-160,0	12,0(18,0)	135,0-165,0	
300	9,0+0,1	72,0-92,0	11,0 (16,0)	67,0-97,0	

Adjust the fuel delivery from each outlet according to the values in

B. Governor settings

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees 1	mm min ⁻¹ 2	Control-rod travel mm min ⁻¹ 3	Control lever deflection degrees 4	mm min ⁻¹ 5	Control-rod travel mm min ⁻¹ 6	Control lever deflection degrees 7	mm min ⁻¹ 8	Control-rod travel mm min ⁻¹ 9	mm min ⁻¹ 10	Control-rod travel mm min ⁻¹ 11
ca.84	1200	18,0-18,1	ca.27	200	14,3-17,2	ca.21	200	10,8-14,2	-	-
ca.84	17,0	1205-1225		300	10,3-11,8		300	8,0		
	4,0	1320-1380		375	8,0		400	3,9-5,0		
	1400	0 - 2,0		500	2,5-3,7		485-	590=0		
				590-720=0						

Torque control travel dimension a = mm

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed	Fuel-delivery characteristics		Starting fuel delivery	
min ⁻¹ 1	cm ³ /1000 strokes 2	min ⁻¹ 3	min ⁻¹ 4	cm ³ /1000 strokes 5	min ⁻¹ 6	cm ³ /1000 strokes 7
		300 = RW 8,0 mm	-	-	-	-

Checking values in brackets

Adjustment at the idle stop

2.83

Testoil-ISO 4113

Test specifications

Fuel injection pumps and governors

WPP 001/4 MTU 39,7a

1. Edition

En

PEV 12ZWM 160/120 RS 1030/11 RQU 425-600/1300 ZWA 62-1

Replaces -

Firm: MTU

Engine: MB 873

0 406 030 999

1-4- 10-7 - 5 - 2 - 12- 9 - 3 - 6 - 8 - 11

0-15-60-75-120-135-180-195-240-255-300-315 • $\pm 0,5^\circ$ ($\pm 0,75^\circ$)

Specifications apply to test tubing 1 680 750 069

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings

Port closing at prestroke 2,5-2,6 mm (from BDC) Zyl. 12

Rotational speed min ⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm ³ /1000 strokes 3	Difference in fuel delivery cm ³ /1000 strokes 4	Fuel delivery Checking values cm ³ /1000 strokes 5	Spring pre-tension (torque-control valve)
1300	12,0+0,1	375,0-385,0	16,0(24,0)	372,0-388,0	
1300	6,0-6,2	113,0-127,0	18,0(27,0)	110,0-130,0	
425	6,0-6,2	31,0-51,0	16,0(24,0)	27,0- 55,0	

Adjust the fuel delivery from each outlet according to the values in

B. Governor settings

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees 1	min ⁻¹ 2	Control-rod travel mm 3	Control lever deflection degrees 4	min ⁻¹ 5	Control-rod travel mm 6	Control lever deflection degrees 7	mm min ⁻¹ 8	Control-rod travel mm 9	min ⁻¹ 10	Control-rod travel mm 11
50 $\pm 0,5$	800	12,0-12,5	ca. 31	600	6,4-6,6	ca. 18	300	10,8-14,0	-	-
	1300	13,5		800	0,5-2,0		450	6,4-6,6		
	12,5	1325-1340		1300	0,5-2,0		500	3,2-5,3		
	4,0	1445-1485					0	550-640		
	0	1495-1603								

Torque control travel dimension a = mm

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed	Fuel-delivery characteristics		Starting fuel delivery	
min ⁻¹ 1	cm ³ /1000 strokes 2	min ⁻¹ 3	min ⁻¹ 4	cm ³ /1000 strokes 5	min ⁻¹ 6	cm ³ /1000 strokes 7
1300	381,0-385,0 (378,0-388,0) *	-	425	72,0-76,0 12,0 Dispersion	-	-

Checking values in brackets

* Adjusted with KDEP 1533

2.83

Testoil-ISO 4113

Test specifications

Fuel injection pumps and governors

WPP 001/4 MTU 29,9 d

1. Edition

En

PE 8 ZWM 140/120 RS 1018/11 RQU 350-500/1050 ZWA 59 DR
Governor adjustment according to VDT-I-420/112

Replaces

Firm: MTU

Engine: MB 837 Ea
537 kW (730 PS)

1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 je 45 $\pm 0,5$ ($\pm 0,75$)

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings

Port closing at prestroke 2,0 - 2,1 mm (from BDC)

Rotational speed min ⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm ³ /1000 strokes 3	Difference in fuel delivery cm ³ /1000 strokes 4	Fuel delivery Checking values cm ³ /1000 strokes 5	Spring pre-tension (torque-control valve)
600	18,0	373,0-378,0	11,0(16,0)	369,0-382,0	
600	9,0	143,0-163,0	14,0(21,0)	148,0-168,0	
200	9,0	71,0- 91,0	14,0(21,0)	66,0- 96,0	
1050	-	C, Sp. 2	10,0(15,0)		
300	-	C, Sp. 7	9,0		

Adjust the fuel delivery from each outlet according to the values in

B. Governor settings

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees 1	min ⁻¹ 2	Control-rod travel mm 3	Control lever deflection degrees 4	min ⁻¹ 5	Control-rod travel mm 6	Control lever deflection degrees 7	min ⁻¹ 8	Control-rod travel mm 9	min ⁻¹ 10	Control-rod travel mm 11
ca. 62	700	18,0	ca. 43	400	12,0-17,0	ca. 27,5	100	15,3-18,0	-	-
	1070	17,6-18,0		500	6,6- 9,1		200	12,0-15,7		
	1150	9,6-14,0		570	0 - 4,8		300	7,1- 8,3		
	1230	0,4- 7,0		660	0		400	1,5- 5,2		
	1300	0					520	0		

Torque control travel dimension a = mm
Speed regulation: 1 mm less control-rod travel at 1075-1085 min⁻¹.

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed	Fuel delivery characteristics		Starting fuel delivery	
min ⁻¹ 1	cm ³ /1000 strokes 2	min ⁻¹ 3	min ⁻¹ 4	cm ³ /1000 strokes 5	min ⁻¹ 6	cm ³ /1000 strokes 7
1050	373,0-378,0 (369,0-382,0)		300	80,0-90,0	100	18,0-18,2 mm RW
						Shutoff solenoid 0,5 - 1,0 mm in front of stop

Checking values in brackets

2.83

Testoil-ISO 4113

Test specifications

Fuel injection pumps and governors

En

WPP 001/4 MTU 37,4 b

8. Edition

PE 10 ZWM 140/120 RS 38/11 RQU 425/1100 ZW 30 DR
Governor adjustment according to VDI-I-420/112

Replaces
Firm: 10.68
MTU
Engine: MB 833

1-2 - 9- 10- 3 - 4 - 5 - 6 - 7 - 8
0-45-72-117-144-189-216-261-288-333 ° $\pm 0,5$ ° ($\pm 0,75$ °)

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings

Port closing at prestroke 2,0-2,1 mm (from BDC) γ 1. 10

Rotational speed min ⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm ³ /1000 strokes 3	Difference in fuel delivery cm ³ /1000 strokes 4	Fuel delivery Checking values cm ³ /1000 strokes 5	Spring pre-tension (torque-control valve)
600	18,0	373,0-378,0	11,0 (16,0)	370,0-381,0	
600	9,0	143,0-163,0	14,0 (21,0)	138,0-166,0	
200	9,0	71,0-91,0	14,0 (21,0)	66,0-96,0	
1080	-	C, Sp. 2	9,0 (14,0)		
900/550	-	C, Sp. 5	11,0 (16,0)		

Adjust the fuel delivery from each outlet according to the values in

B. Governor settings

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees 1	min ⁻¹ 2	Control-rod travel mm 3	Control lever deflection degrees 4	min ⁻¹ 5	Control-rod travel mm 6	Control lever deflection degrees 7	min ⁻¹ 8	Control-rod travel mm 9	min ⁻¹ 10	Control-rod travel mm 11
max.	600	18,0-18,5	-	-	-	ca. 27	600	1,3-1,7	700	17,6-18,0
ca. 58	1100	16,5-16,7					150	16,5-18,0	900	16,8-17,2
	1150	12,0-14,6					425	5,3-5,8	1050	16,5-16,7
	1200	7,0-10,8					800	0,6-1,2		
	1250	2,0-6,4					1100	0,2-1,1		
	1350	0-1,0					1140	0		

Torque control travel dimension a = 0,35 mm

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed	Fuel-delivery characteristics		Starting fuel delivery	
min ⁻¹ 1	cm ³ /1000 strokes 2	min ⁻¹ 3	min ⁻¹ 4	cm ³ /1000 strokes 5	min ⁻¹ 6	cm ³ /1000 strokes 7
1080	316,0-320,0 (313,0-323,0)		900	305,0-313,0 (301,0-317,0)	100	18,0-18,2 mm RW
			550	271,0-279,0 (267,0-283,0)	425	5,1-5,7
					1220	Dispersion 0,8 8,5-10,5 Dispersion 2,1
Limit stop screw		to 0,5 - 1,0 mm				

Checking values in brackets
Shutoff solenoid
0,5 - 1,0 mm in
front of stop

2.83

Testoil-ISO 4113

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Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 5,7o
7. Edition

En

Testoil-ISO 4113

PES 6 A 90 D 410 RS 2293 Z RSV 575-1250 A 1 B 618 L
Komb.-Nr. 0 400 876 195

supersedes 10.82
company: Daimler-Benz
engine: OM 352 A
107 kW (145 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,10-2,30) mm (from BDC)
2,15-2,25

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1230	11,2+0,1	7,5 - 7,6	0,3(0,45)			
575	7,4-7,6	2,1 - 2,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca. 34	575	7,5	-	-
	x = 5,0						610	1,9-2,1		
							580-640	=2,0		
ca. 66	1260-1270 = 10,2									
⑤	1400 = 0,3-1,7									

Speed difference between 1.0 mm regulated and control-rod travel 4.0 mm at n=35-45min/1
The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat		③a Fuel delivery characteristics		Starting fuel delivery idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1230	74,5 - 75,5 (72,5 - 77,5)	1260-1270*	-	-	-	100	71,0-81,0 / 13,8- 14,2 mm RW		

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 DAF 8,3 n

4. Edition

En

Testoil-ISO 4113

PE 6 A 95 D 410 RS 2575 RSV 250-750 A7B2124L
Komb.-Nr. 0 400 676 166

Specifications apply to test tubing 1 680 750 015

supersedes 10.82

company: DAF

engine: DU 825
Generator

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $(1,95-2,15)$ mm (from BDC) RW 9,0 mm

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm
1	2	3	4	2	3	6
750	12,5+0,1	9,9 - 10,1	0,4(0,7)			
250	6,0-6,2	0,7 - 1,3	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Port closing difference between control-rod travel β and max. = $3,0-4,0^\circ$.

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca. 15	250	6,1	750	12,5+0,1
	x =	4,25					250	**	700	12,5+0,3
ca. 40	11,5	770-780					260-320	= 2,0 mm		
⑤	4,0	795-815								
	955	0.3-1.7								

** Set idle-speed auxiliary spring at 2,0 mm control-rod travel, then 1/2 turn back.

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	
750	98,5 - 100,5 (96,5 - 102,5)	770-780*	-	-	100	19,5-21,0 mm RW	-	-	

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.83

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 DAF 6,2 i 1

3. Edition

En

PE 6 A 90 D 320 RS 2547 RSV 250-1200 A5B 779 R

Komb.-Nr. 0 400 676 141

See service Information VDT-I-DAF 004

 supersedes 8.82
 company: DAF
 engine: DT 615

Specifications apply to test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke ^{2,2-2,3}
 (2,15-2,35) mm (from BDC) RW 9 /

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	10,8+0,1	7,1 - 7,2	0,3(0,45)			
250	5,9-6,1	0,8 - 1,2	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in .
Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.22	250	5,5	1000	10,8-10,9
	x	= 3,25					250	5,9-6,1	400	10,8-11,0
							330-390	=2,0	300	11,0-11,5
⑤ ca.54	9,8	1240-1250								
	4,0	1280-1310								
	1450	0,3 - 1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9	
LDA 1000	0,7 bar 70,5 - 71,5 (68,5 - 73,5)	1240-1250*	LDA 600	0 bar 50,0 - 51,0 (48,0 - 53,0)	100	133,0-143,0 / 19,5 + 21,0 mm RW	0 -	-	

Checking values in brackets

* 1 mm less control rod travel than col. 2

Port closing difference between control-rod travel 9 mm and

3.83

21 mm and max. = 2,5-3,5° camshaft.

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D. Adjustment Test for Manifold Pressure Compensator

Test at n = 1000 rev/min decreasing pressure - in bar gauge pressure
increasing
XXXXXXX

DAF 6,2 i 1 -2-

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
.. RS 2547 + RSV .. A5B 779 R	0,7 bar	0,25 0,21 0	10,8 - 10,9 10,6 - 10,7 10,1 - 10,4 9,8 - 10,0

Notes:

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 5,7 q 2

10. Edition

En

PES 6 A 90 D 410 RS 2293 RSV 350-1300 AOB 783 L
Komb.-Nr. 0 400 876 255

supersedes 11.82
company Daimler-Benz
engine OM 352 A
110 kW (150 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-1,25
(2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	11,4+0,1	7,6-7,7	0,3(0,45)			
350	7,3-7,5	1,0-1,4	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			4 Lower rated speed Control rod travel rev/min mm 8 9			3 Torque control Control rod travel rev/min mm 10 11	
loose	Control rod travel mm 2	Control rod travel mm rev/min 3	-	-	-	loose	350	7,4	1300	11,4-11,5
	800	0,3-1,0 x = 3,5					100	min. 19,0	800	11,7-11,8
ca. 62	10,0	1340-1350					350	7,3-7,5	1050	11,5-11,7
	4,0	1460-1490					570-630	=2,0		
2a	1600	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F) rev/min cm ³ /1000 strokes 1 2		6 Rotational speed limit Note changed to) rev/min 3		3a Fuel delivery characteristics rev/min cm ³ /1000 strokes 4 5		Starting fuel delivery Idle rev/min cm ³ /1000 strokes 6 7		4a Idle stop Control rod travel rev/min mm 8 9	
LDA 1300	0,7 bar 75,5-76,5 (73,5-78,5)	1340-1350*		LDA 500	0,7 bar 62,0-64,0 (59,5-66,5)	100	78,0-88,0 (75,0-91,0)	-	-
LDA 800	0,7 bar 67,0-69,0 (64,5-71,5)			LDA 500	0 bar 50,0-52,0 (47,5-54,5)				

Checking values in brackets

* 1 mm less control rod travel than col 2

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Testoil-ISO 4113

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J1

D. Adjustment Test for Manifold Pressure Compensator

MB 5,7 q 2

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PES 6 A .. RS 2293 +RSV..AOB 783 L	0,7	0 0,39 0,22	11,7-11,8 10,5-10,6 11,4-11,5 10,7-10,9

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Testing the hydraulic start-locking device

Locking at 0.4 - 0.5 bar
Unlocking at 0.15- 0.25bar

①

Test Specifications

Fuel Injection Pumps ①

and Governors

WPP 001/4 UNI 13,8 b

1. Edition

En

PE 6 P 120 A 720 RS 214 RQV 425-1100 PA 438-2
Komb.-Nr. 0 401 846 486

supersedes
company Unic-IVECO
engine: 8215.02.542

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\begin{matrix} 2,0-2,1 \\ (1,95-2,15) \end{matrix}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	9,5-9,6	16,7-17,0	0,5(0,9)			
425	5,5-5,7	1,5-2,1	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1130	15,2-17,8	-	-	-	ca. 11	100 425	min. 7,1 5,5-5,7	400 630 870 1100	0,3-0,7 4,3-5,0 6,2-6,5 8,2
ca. 59	8,5 4,0 1350	1140-1150 1210-1240 0-1,0				425-525 (3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2		Rotational speed limitation intermediate speed 4a	Fuel delivery characteristics high idle speed 5b		Starting fuel delivery Idle switching point 6		Torque-control travel Control rod travel mm 9	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	mm 9
1100	167,0-170,0 (164,0-173,0)	1140-1150*	-	-	100	19,5-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

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①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 11,0 i 1

2. Edition

En

Testoil-ISO 4113

PE 6 P 110 A 320 LS 3805 RQV 300-1150 PA 524-6

supersedes 82

company: Daimler-Benz

engine: OM 421

148 kW (201 PS)

1 - 6 - 3 - 5 - 2 - 4
0 -75 -120-195-240-315° $\pm 0,5^\circ$ ($\pm 0,75^\circ$)

Komb.-Nr. 0 401 846 756

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\begin{matrix} 4,0 - 4,1 \\ (3,95-4,15) \end{matrix}$ mm (from BDC) Zyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	12,6+0,1	12,7 - 12,9	0,4(0,8)			
300	8,5-8,7	1,6 - 2,2	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1150	15,2-17,8	-	-	-	ca. 19	100 300	min.10,0 8,3-8,5	250 550 850 1150	1,0-1,2 3,4-3,7 4,9-5,3 7,6
ca. 65	11,6 4,0 1500	1190-1200 1240-1270 0 - 1,0				330-740				

Torque control travel $\alpha =$ mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Torque-control	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1150	127,0-129,0 (124,0-132,0)	1190-1200 *	600	116,0-120,0 (114,0-124,0)	100	130,0-150,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.83

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 PEN 7,0 c 2

1. Edition

En

PE 6 P 100 A 320 RS 291 Z RSV 200-1000 P 1/305 R
Komb.-Nr. 0 401 876 218

supersedes
company Volvo-Penta
engine TD 70 B

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,8-2,9$ mm (from BDC)
 $(2,75-2,95)$

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	10,8±0,1	10,5-10,7	0,4(0,8)			
225	5,8-6,0	1,0-1,4	0,2(0,5)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 24	225	5,9	-	-
	x =						225	5,8-6,0		
							280-325	=2,0		
ca. 54	9,8	1040-1050								
2a	4,0	1090-1120								
	1150	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 4a Idle stop	
Test oil temp. 40°C (104°F)		Note changed to)							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
700	105,0-107,0 (102,0-110,0)	1040-1050*	-	-	100	210,0-260,0 = 20,5-21,0 mm RW	0	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

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3.83

J5

15

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 11,0 q 1

1. Edition

En

PE 6 P 120 A 320 LS 3815 RSV 750-1150 P 1/820 R

1- 6- 3 - 5 - 2 - 4

0-75-120-195-240-315° ± 0,5° (± 0,75°)

Values only apply to test nozzle-and-holder

assembly 1 688 901 019 and fuel-injection test

tubing 1 680 750 067

supersedes

company Daimler-Benz

OM 421 A

engine 184 kW (250 PS)

Komb.-Nr. 0 401 876 722

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0-4,1 mm (from BDC)
(3,95-4,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1130	11,4+0,1	16,8-17,0	0,5(0,9)			
750	3,5-3,7	1,8-2,4	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0 x = 4,0	-	-	-	ca. 30	750	4,2	-	-
ca. 54	10,4	1160-1170					750	4,1-4,3		
2a	4,0	1185-1215					755-815	= 2,0		
	1300	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp. 40°C (104°F)		Note changed to . . .							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
1130	168,0-170,0 (165,0-173,0)	1160-1170*	-	-	100	170,0-190,0	0	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MB 18,3 f

1. Edition

En

PE 10 P 110 A 320 LS 3818 RQ 750 PA 636

Komb.Nr. 0 401 849 708

1 - 8 - 7 - 6 - 3 - 5 - 2 - 10 - 9 - 4

0 -27 -72 -99 -144-171-216-243-288-315° ± 0,5° (± 0,75°)

supersedes -

company: Daimler-Benz

engine: OM 423

197 kW (268 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

4,0 - 4,1
(3,95-4,15)

mm (from BDC) = RW 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
730	13,5+0,1	13,4-13,6	0,4(0,8)			
300	8,5-8,7	1,4-2,2	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
rev/min 1	Control rod travel mm 2	Setting point rev/min 3	Control rod travel mm 4	Test specifications Control rod travel mm 5	rev/min 6	Setting point rev/min 7	Control rod travel mm 8	Test specifications rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	12,5 4,0 900	750-755 790-800 0-1,0	-	-	-	-	-	-

Torque-control travel
on flyweight assembly dimension a =

mm

Speed regulation: At

750-755 min⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery idle speed	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	Control rod travel mm 3a	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes/mm 7
730	134,0-136,0 (131,0-139,0)	-	-	-	-	100	130,0-150,0

Checking values in brackets

3.83

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MB 11,8 a 2
2. Edition

En

PE 6 P 100 A 720 RS 15 RQ 250/1100 PA 43 DR
Komb.-Nr. 0 401 846 186

supersedes 8.82

company: Daimler-Benz
engine: OM 355

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,8 - 2,9$ (2,75-2,95) mm (from BDC) 9,0 - 12,0 mm RW

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	13,4+0,1	11,6 - 11,8	0,3(0,6)			
250	7,9-8,1	1,8 - 2,4	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5 rev/min 6		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 9 rev/min 10		Torque control rev/min 11 Control rod travel mm 12	
600	15,6-16,4	600	16,0	12,4 4,0 1350	1145-1160 1200-1230 0 - 1,0	250	8,0	100 250 410-450	min.9,6 7,9-8,1 = 2,0	-	-

Torque-control travel on flyweight assembly dimension a = 0 mm Speed regulation: At 1145-1160 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
1100	116,0-118,0 (114,0-120,0)	450	450	98,0-102,0 (95,5-104,5)	100	140,0-160,0	

Checking values in brackets

4.83

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Testoil-ISO 4113

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MAN 11,1 q 6

3. Edition

En

PES 6 P 120 A 720 LS 388 RQ 250/1100 PA 452

Komb.-Nr. 0 402 046 195

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067.

supersedes 11.82
MAN

company: D 2566 MK (F)

engine: 235 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $3,0 - 3,1$ mm (from BDC) $7,1 - 6$
(2,95-3,15)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm
1	2	3	4	2	3	6
750	13,1+0,1	21,7-22,0	0,5 (0,9)			
250	6,3-6,5	1,1-1,7	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider		Full-load speed regulation				Idle speed regulation				Torque control	
PRG check		Setting point		Test specifications		Setting point		Test specifications			
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
600	19,2-20,8	600	20,0	10,3	1145-1160	250	6,4	100	min. 7,9	1100	11,3-11,4
VH =	max. 46°			4,0	1185-1215			250	6,3-6,5	750	13,1-13,2
				1400	0 - 1,0			350-390	= 2,0	865	12,7-12,9
										975	11,7-12,0

Torque-control travel on flyweight assembly dimension a = 0,7 mm

Speed regulation At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever		Control rod stop		Fuel delivery characteristics		Starting fuel delivery	
Test oil temp. 40°C (104°F)						Idle speed	
rev/min	cm ³ /1000 strokes	rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes / mm
1	2	3		4	5	6	7
LDA 750	1,0 bar 217,0-220,0 (214,0-223,0)	-		LDA 650	1,0 bar 208,0-213,0 (205,0-216,0)	100	205,0 - 225,0 (201,0 - 229,0)
1100	180,0-185,0 (177,0-188,0)			LDA 500	0,34 bar 145,0-150,0 (142,0-153,0)		
				LDA 500	0 bar 101,0-104,0 (98,0-107,0)		

Checking values in brackets

5.33

Testoil-ISO 4113

BOSCH

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Druck: 1982, 1983, 1984, 1985, 1986, 1987, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025

D. Adjustment Test for Manifold Pressure Compensator

MAN 11,1 q 6

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 6 P..LS 388 + RQ..PA 452	1,0	0 0,34 0,61	13,1 - 13,2 9,4 - 9,5 10,9 - 11,0 12,5 - 12,9

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 SCA 11,0 r 4
4. Edition

40

En

PE 6 P 110 A 720 RS 3040
Komb.-Nr. 0 401 876 720

RSV 350-1100 P1/481

supersedes: 1.83
company: Scania
engine: DS 11
Schlepper

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\overset{3,3-3,4}{(3,25-3,45)}$ mm (from BDC) = RW 9,0-12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1100	13,1+0,1	15,8-16,0	0,6(0,8)			
350	4,4-4,6	1,7-2,1	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca. 23	350	4,0	-	-
	x =	2,75					100	min. 20,0		
							350	4,4-4,6		
ca. 66	12,1	1140-1150					460-520	= 2,0		
2a	4,0	1220-1250								
	1350	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to .) rev/min							
rev/min	cm ³ /1000 strokes	3		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2			4	5	6	7	8	9
1100	158,0-160,0 (156,0-162,0)	1140-1150*	700	161,5-164,5 (159,0-167,0)		100	240,0-290,0 = RW 20,0-21,0 mm	-	-
						350	17,0-21,0		

Checking values in brackets

* 1 mm less control rod travel than col 2

6.83

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Testoil-ISO 4113

Test Specifications

Fuel Injection Pumps (1A)

and Governors

40

WPP 001/4 PEN 6,0 e

2. Edition

En

PES 6 MW 100/320 RS 1004
0 403 476 011

RSV 325-1250 MW/308

supersedes 4.82
company Volvo/Penta
TD 60 D
engine 118 kW (160 PS)

1 - 5 - 3 - 6 - 2 - 4
0 -60 -120-180-240-300 \pm 0,50 (0,75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,80-2,90}{(2,75-2,95)}$ mm (from BDC) $\frac{9,0-12,0}{9,0-12,0}$ mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	10,9+0,1	8,1 - 8,3	0,35(0,6)			
325	4,7-4,9	0,95-1,35	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			4 Lower rated speed Control-lever deflection in degrees 7			3 Torque control Control rod travel mm 11	
Control rod travel mm 2	Control rod travel mm rev/min 3					rev/min 8	Control rod travel mm 9		rev/min 10	
loose	800	0,3-1,0				ca. 26	325	4,3	350	11,5+0,1
	x = 4,0						325	4,7-4,9	500	11,2-0,1
ca. 51	1290-1330 = 9,0						450-510 = 2,0		1250	10,9+0,1
2a	1335-1365 = 4,0									
	1450 = 0,3 - 1,7									

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp. 40°C (104°F) rev/min 1		6 Rotational-speed limit Note: changed to ... rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		4a Idle stop Control rod travel mm 9	
cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes 7		rev/min 8	
1000	81,0-83,0 (79,0-85,0)	1290-1300*				100	min. 140	325	4,8
						325	9,5-13,5 7,0-16,0		

Checking values in brackets

* 1 mm less control rod travel than col 2

5.83

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 RVI 5,5 a

1. Edition

En

PES 6 MW 80/320 RS 1104
RSV 300-1450 MW 2/801
0 403 476 013

supersedes*
company RVI
engine MD 060212
98 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\begin{matrix} 1,75-1,85 \\ (1,70-1,90) \end{matrix}$ mm (from BDC) RW 9,0-12,0

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1450	10,2+0,1	5,85-5,95	0,25 (0,4)			
300	7,2-7,4	0,85-1,15	0,20(0,35)			
800	11,6-11,7		0,35(0,45)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			4 Lower rated speed Control-lever deflection in degrees rev/min 7 8 9			3 Torque control Control rod travel rev/min mm 10 11	
	Control rod travel mm 2	Control rod travel mm rev/min 3								
loose	800	0,3-1,0				ca. 20	300	6,7-6,8	800	11,6+0,1
	X = 4						300	7,2-7,3	1300	10,2+0,1
ca. 57							100	min. 19,0	1450	10,2+0,1
2a		1490-1500 = 9,2 1540-1570 = 4,0 1700 = 0,3-1,7					430-490 = 2,0			

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F) rev/min 1		6 Rotational-speed limit Note: changed to) rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery 5 Idle rev/min 6		4a idle stop Control rod travel mm 9	
	cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes 7		
1450	58,5-59,5 (57,0-61,0)	1490-1500	800	56,0-58,0 (54,0-60,0)		100	65,0-75,0 (62,0-78,0)	300	7,2-7,4
						300	8,5-11,5 (7,0-13,0)		

Checking values in brackets

* 1 mm less control rod travel than col 2

5.83

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Test Specifications Fuel Injection Pumps 1A and Governors

40

WPP 001/4 VOL 6,0 r

1. Edition

En

PES 6 MW 100/320 RS 1111

RSV 325-1400 MW 2 A 314

0 403 476 016

supersedes -

company

engine

Volvo

TAMD 60 C

184 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{3,10-3,20} (3,05-3,25) mm (from BDC) RW 9,0-12,0

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	13,0-0,1	12,1-12,3	0,35 (0,6)			
325	5,6-5,7	0,95-1,35	0,35(0,55)			
1400	13,0+0,1		0,5 (0,7)			
1000	10,5+0,1					

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			4 Lower rated speed Control-lever deflection in degrees rev/min 7 8 9			3 Torque control rev/min Control rod travel mm 10 11	
Control rod travel mm 2	Control rod travel mm rev/min 3									
loose	800 0,3-1,0 X = 2,75					ca. 22	325 5,1-5,2 325 5,6-5,7 100 min. 19,0		350 13,5+0,1 500 13,0+0,1	
ca. 60	1440-1450 = 12,0 1505-1535 = 4,0									

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp. 40°C (104°F) rev/min 1		6 Rotational-speed limit Note: changed to ... rev/min 3		3a Fuel delivery characteristics rev/min cm ³ /1000 strokes 4 5		Starting fuel delivery Idle rev/min cm ³ /1000 strokes 6 7		5 4a Idle stop rev/min Control rod travel mm 8 9	
LDA	0,8 bar	1440-1450 *		LDA	0,8 bar	100	19,0-21,0	325	5,6-5,7
1000	121,0-123,0 (119,0-125,0)			1400	119,0-123,0 (117,0-125,0)	325	mm RW 9,5-13,5 (7,0-16,0)		
				LDA	0 bar				
				1000	83,0-85,0 (81,0-87,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

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D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
RS 1111 + RSV... 314	0,8 bar	0 bar 0,48 bar 0,18 bar	13,0-13,1 10,5-10,6 12,4-12,5 11,1-11,2

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

PE 10 P 120 A 320 LS 3824 RQ 300/1050 PA 656

1- 8- 7- 6 - 3 - 5 - 2 - 10 - 9 - 4

0-27-72-99 -144-171-216-243 -288-315° ± 0,5° (± 0,75°)

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067.

supersedes 10.82

company: Daimler-Benz

OM 423 LA

engine: 346 kW (470 PS)

Euclid

Komb.-Nr.

0 401 849 707

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $4,0 - 4,1$ mm (from BDC) Zyl. 10
(3,95-4,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	11,3+0,1	17,7-17,9	0,5 (0,8)			
300	5,0-5,2	1,6-2,2	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 4		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 8		Torque control rev/min 11		Control rod travel mm 12	
600	19,2-20,8	600	20,0	10,3	1095-1110	300	4,3	100	min. 5,8	-	-	-	-
VH =	max. 46°			4,0	1165-1195			300	4,2 - 4,4				
				1300	0 > 1,0			335-375	= 2,0				

Torque-control travel
on flyweight assembly dimension a =

0

mm

Speed regulation: At

1095-1110 min⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
LDA	0,9 bar			LDA	0,9 bar	100	150,0-170,0
1050	177,0-179,0 (174,0-182,0)	-		600	173,0-179,0 (170,0-182,0)		
				LDA	0 bar		
				500	141,0-143,0 (138,0-146,0)		

Checking values in brackets

3.83

D. Adjustment Test for Manifold Pressure Compensator

MB 18,3 e

-2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE 10 P..LS 3824 + RQ..PA 656	0,90	0 0,41 0,35	11,3 - 11,4 10,2 - 10,4 10,9 - 11,1 10,5 - 10,6

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MB 14,6 g

4. Edition

En

PE 8 P 120 A 320 LS 3807 RQ 300/1150 PA 546
1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je 45° $\pm 0,5^\circ$ ($\pm 0,75^\circ$)

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067.

supersedes 4.83
company: Daimler-Benz
engine: OM 422 A
243 kW (330 PS)
Komb.-Nr. 0 401 848 733

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{4,0-4,1}{(3,95-4,15)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	10,7 \pm 0,1	15,6-15,8	0,5(0,9)			
300	5,2-5,4	1,2-1,8	0,8(1,2)			
750/500	----	C, 4 u. 5	0,7(1,1)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Checking of slider PRG check rev/min 1		Control rod travel mm 2		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 4		rev/min 5		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 8		rev/min 9		Control rod travel mm 10		Torque control rev/min 11		Control rod travel mm 12	
600		19,2-20,8		600	20,0	9,7 4,0		1200-1215 1235-1270		300	4,5	100 300 340-380 = 2,0		min.6,0 4,4-4,6				1150 750 900		10,7-10,8 11,0-11,3 10,9-11,3	
VH = max. 46°																					

Torque-control travel on flyweight assembly dimension a = 0,2 mm Speed regulation: At 1200-1215 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
cm ³ /-1000 strokes 2				cm ³ /-1000 strokes 5		cm ³ /1000 strokes/mm 7	
LDA 1150	0,7 bar 156,0-158,0 (153,0-161,0)	-		LDA 750	0,7 bar 172,0-174,0 (169,0-177,0)	100	140,0-160,0 (136,0-164,0)
				LDA 500	0 bar 135,0-137,0 (132,0-140,0)		

Checking values in brackets

Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

MB 14,6 g

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE 8 P..LS 3807 mit ..PA 546	0,47	0 0,40	10,9-11,3 10,2-10,4 10,3-10,6

Notes:

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MAN 11,4 c

1. Edition

En

PES 6 P 120 A 720 LS 457

RQ 750 PA 566

supersedes

company: MAN

engine: D 2566 MLE
198 kW

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $3,0-3,1$ mm (from BDC) Zyl. 6 = RW 9,0-12,0 mm
(2,95-3,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,5+0,1	20,2-20,4	0,5(0,8)			
250	6,1-6,3	1,5-2,1	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5 rev/min 6		Idle speed regulation Setting point rev/min 7 Control rod travel mm 8		Test specifications rev/min 9 Control rod travel mm 10		Torque control rev/min 11 Control rod travel mm 12	
-	-	-	-	11,5 4,0 900	750-755 775-785 0-1,0	-	-	-	-	-	-

Torque-control travel
on flyweight assembly dimension a =

mm

Speed regulation: At

750-755 min⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1 cm ³ /-1000 strokes 2		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4 cm ³ /-1000 strokes 5		Starting fuel delivery Idle speed rev/min 6 cm ³ /1000 strokes/mm 7	
700	202,0-204,0 (199,0-207,0)	-	-	-	-	100	19,5-21,0 mm RW

Checking values in brackets

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MAN 17,4 b 3

1. Edition

En

PE 10 P 120 A 520/5 LS 850 RQ 750 PA 404-2

supersedes
company MANengine: D 2540 MLE
283 kW1- 8- 7- 6- 3 - 5 - 2 - 10- 9 - 4
0-27-72-99-144-171-216-243-288-315° $\pm 0,50$ ($\pm 0,75^\circ$)Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Komb.-Nr.
0 401 849 164

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke $(2,95-3,15)$ mm (from BDC) Zyl. 10

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,8 \pm 0,1	19,1-19,4	0,5(0,9)			
250	6,6-6,9	2,2-2,6	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Checking of slider PRG check rev/min 1		Setting point Control rod travel mm 2		Test specifications Control rod travel mm 5		rev/min 6		Setting point Control rod travel mm 8		Test specifications Control rod travel mm 10		rev/min 11		Control rod travel mm 12	
-	-	-	-	10,8 4,0 900	750-755 780-790 0-1,0	-	-	-	-	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = mm Speed regulation: At 750-755 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
cm ³ /-1000 strokes 2	cm ³ /-1000 strokes 5	cm ³ /-1000 strokes 7	Control rod travel mm	cm ³ /-1000 strokes 7	Control rod travel mm	cm ³ /1000 strokes / mm RW	
700	191,0-194,0 (188,0-197,0)	-	-	-	-	100	19,5-21,0 mm RW

Checking values in brackets

2.83

J21

J21

BOSCH

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Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MB 21,9 a 1

1. Edition

En

PE 12 P 120 A 320 LS 3819 RQ 900 PA 634

1 - 5 - 9 - 8 - 3 - 4 - 11 - 10 - 2 - 6 - 7 - 12

0 -15 -60 -75 -120-135-180-195-240-255-300-315° ± 0,5° (± 0,75°)

Values only apply to test nozzle-and-holder

assembly 1 688 901 019 and fuel-injection test

tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes -

company: Daimler-Benz

engine: OM 424 A

374 kW

Komb.-Nr.

0 401 840 704

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0 - 4,1 mm (from BDC) Zyl. 12
(3,95-4,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	12,0+0,1	17,9-18,1	0,5 (0,9)			
300	4,8-5,0	1,2-2,0	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 4		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 8		Torque control rev/min 11		Control rod travel mm 12	
	Control rod travel mm 2												
-	-	-	-	10,8 4,0 1050	900-905 935-945 max. 1,0	-	-	-	-	-	-	-	-

Torque-control travel
on flyweight assembly dimension a =

mm

Speed regulation: At

900 - 905 min⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
	cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes/mm 7
850	179,0-181,0 (176,0-184,0)	-	-	-	-	100	180,0-200,0

Checking values in brackets

3.83

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MB 11,4 i

4. Edition

En

Testoil-ISO 4113

PES 6 P 120 A 820 LS 3077 RQ 300/1100 PA 585
Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067.

supersedes 11.81

company: Daimler-Benz

engine: OM 407 LA

235 kW (320 PS)

Komb.-Nr. 0 402 046 722

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

^{4,0-4,1}
(3,95-4,15)
mm (from BDC) ²yl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	13,4+0,1	21,2 - 21,4	0,5 (0,9)			
300	5,5-5,7	1,4 - 2,0	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5 rev/min 6		Idle speed regulation Setting point rev/min 7 Control rod travel mm 8		Test specifications rev/min 9 Control rod travel mm 10		Torque control rev/min 11 Control rod travel mm 12	
650	19,2-20,8	650	20,0	12,4	1145-1160 4,0 1200-1230	300	4,9	100 300 370-410	min. 6,5 4,8-5,0 =2,0 mm	-	-

Torque-control travel
on flyweight assembly dimension a =

mm

Speed regulation: At

1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1 cm ³ /-1000 strokes 2		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4 cm ³ /-1000 strokes 5		Starting fuel delivery idle speed rev/min 6 cm ³ /1000 strokes / mm 7	
LDA 1100	0,70 bar 212,0 - 214,0 (209,0 - 217,0)	-	-	LDA 600	0,70 bar 205,0 - 211,0 (202,0 - 214,0)	100	170,0 - 190,0
				LDA 500	0 bar 146,0 - 148,0 (143,0 - 151,0)		

Checking values in brackets

3.33

D. Adjustment Test for Manifold Pressure Compensator

MB 11,4 i -2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE 6 P .. LS 3077 + .. PA 585	0,70	0 0,42 0,31	13,4-13,5 10,7-10,8 12,6-12,7 11,4-11,5

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

Testoil-ISO 4113

PE 12 P 120 A 320 LS 3819

RQ 750 PA 635

supersedes 6.82

company: Daimler-Benz

engine: OM 424 A

330 kW (449 PS)

Generator

Komb.-Nr. 0 401 840 705

 1- 5- 9- 8- 3- 4- 11- 10- 2- 6- 7- 12
 0-15-60-75-120-135-180-195-240-255-300-315° $\pm 0,5^\circ$ ($\pm 0,75^\circ$)

 Values only apply to test nozzle-and-holder
 assembly 1 688 901 019 and fuel-injection test

At test bench 4 600 750 10 600 Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

 4,0-4,1
 (3,95-4,15)

mm (from BDC) Zyl. 12

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ / 100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
700	11,9 \pm 0,1	19,3 - 19,5	0,5(0,8)			
300	4,8-5,0	1,4 - 2,0	0,8(0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
Control rod travel mm		Setting point		Test specifications		Setting point		Test specifications		Control rod travel	
rev/min	mm	rev/min	mm	rev/min	mm	rev/min	mm	rev/min	mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11	12
-	-	-	-	10,9 4,0	750-755 780-790	-	-	-	-	-	-

 Torque-control travel
 on flyweight assembly dimension a =

mm

Speed regulation: At

750-755 min

1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery idle speed	
Control rod travel		Control rod travel		Control rod travel		Control rod travel	
rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes / mm
1	2	3	5	4	5	6	7
700	193,0 - 195,0 (190,0 - 198,0)			-	-	100	180,0 - 200,0

Checking values in brackets

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 KHD 15,8 g

3. Edition

En

PE10P110A920/5 LS 3073 RQ300/1150PA535

Komb.-Nr. 0 401 849 702

1-10- 9 - 4 - 3 - 6 - 5 - 8 - 7 - 2

0-27-72-99-144-171-216-243-288-315 $\pm 0,5^\circ$ ($\pm 0,75^\circ$)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes 1.83

company BF10L413F

engine 265kW (360 PS)

/ 2050 min⁻¹

bzw. 259 kW (352 PS)

/ 2300 min⁻¹

(Maxidyne)

A. Fuel Injection Pump Settings

Port closing at prestroke $\begin{matrix} 2,8-2,9 \\ (2,75-2,95) \end{matrix}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
800	11,6+0,1	13,8-14,0	0,4(0,8)			
300	6,9-7,1	1,8-2,4	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
700	19,2-20,9	700	20,0	9,7	1195-1205	300	7,0	100	min. 8,5	1150	10,7-10,9
				4,0	1220-1250			300	6,9-7,1	800	11,6-11,7
VH=	max. 46°			1350	0-1,0			340-380	2,0	1020	11,5-11,7
										1050	11,2-11,4

Torque-control travel
on flyweight assembly dimension a =

mm

Speed regulation At

1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	Control rod travel cm ³ /1000 strokes / mm 7
LDA 800	0,9 bar 138,0-140,0 (135,0-143,0)			LDA 500	0 bar 85,0-89,0 (82,0-92,0)	100	115,0-140,0

Checking values in brackets

5.83

BOSCH

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K2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE10P..LS3073 + .. PA535	0,55	0,90	11,2-11,3
		0	11,6-11,7
		0,39	9,4-9,5
			10,1-10,3

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)



Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 SCA 8,0 e 2
4. Edition

En

PE 6 P 110 A 720 RS 393 RSV 350-1200 P 1/462 R
Komb.-Nr. 0 401 876 240

supersedes 12.82
company Scania
engine D 8

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers.

A. Fuel Injection Pump Settings

3,0-3,1
mm (from BDC)
Fuel closing at prestroke (2,95-3,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm/100 strokes 3	Difference cm/100 strokes 4	Control rod travel mm 2	Fuel delivery cm/100 strokes 3	Spring pretensioning torque control valve mm 6
600	12,0±0,1	8,7-8,9	0,5(0,8)			2,5 ±0,1
350	7,3-7,5	1,5-1,9	0,2(0,4)			(2,2-2,9)

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
Loose	800	0,3-1,0	-	-	-	ca. 31	350	6,5	-	-
	x = 4,0									
ca. 71	11,0	1240-1250					350	6,9-7,1		
②a	4,0	1300-1330					595 -	655±2,0mm		
	1450	0,3-1,7								

The numbers denote the sequence of the tests.

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full load stop		⑥ Rotational speed limit		③a Fuel delivery characteristics		Starting fuel delivery Idle		④a Idle stop	
Test oil temp. 40 °C (104 °F)		Note changed to rev/min							
rev/min 1	cm/1000 strokes 2	3	rev/min 4	cm/1000 strokes 5	rev/min 6	cm/1000 strokes 7	rev/min 8	Control rod travel mm 9	
600	37,0-89,0 (85,0-91,0)	1240-1250*	1200	99,5-102,5 (97,0-105,0)	100	150-200 = 20,0- 21,0 mmRW	-	-	

Checking values in brackets

* 1 mm less control rod travel than col. 2

6.83

BOSCH

Geschäftsbereich KM-Kundendienst, Kfz-Ausrüstung
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Testoil-ISO 4113

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 SCA 11,0 s 1
3. Edition

En

PE 6 P 110 A 720 RS 3065
Komb.-Nr. 0 401 876 719

RSV 350-1100 P1/481

supersedes 10.81
company Saab-Scania
engine DN 11 01

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers.

A. Fuel Injection Pump Settings

Port closing at prestroke 3,3-3,4 mm (from BDC) RW 9,0-12,0 mm
(3,25-3,45)

Rotational speed rev./min.	Control rod travel mm	Fuel delivery cm/100 strokes	Difference cm/100 strokes	Control rod travel mm	Fuel delivery cm/100 strokes	Spring pre-tensioning (torque control valve) mm
1	2	3	4	2	3	b
1100	12,5±0,1	13,5-13,7	0,5(0,8)			2,5±0,1 (2,2-2,9)
350	6,2-6,4	1,5-1,9	(0,2(0,4))			

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

1 Upper rated speed rev./min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of detection of control lever	Control rod travel mm	Control rod travel cm/rev./min				Control lever deflection in degrees	rev./min	Control rod travel mm	rev./min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca. 20	350	5,5	-	-
	x =	3,25					100	min. 20,0		
ca. 66							350	5,9-6,1		
2a							490-	550=2,0		
	1140 - 1150=	11,5								
	1210 - 1240=	4,0								
	1350 =	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		5 Starting fuel delivery Idle		4a Idle stop	
Test oil temp. 40 °C (104 °F)		Note changed to							
rev./min	cm/1000 strokes	rev./min		rev./min	cm/1000 strokes	rev./min	cm/1000 strokes	rev./min	Control rod travel mm
1	2	3		4	5	6	7	8	9
1100	135,0-137,0 (133,0-139,0)	1140-1150*		600	132,5-135,5 (130,0-138,0)	100	190,0-240,0 bei 20,0-21,0mm RW		

Checking values in brackets

* 1 mm less control rod travel than col. 2

6.83

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K5

Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 Volvo 3,6 g1

2 Edition

En

VE 6/11 F 1800 L 19-7
0 460 416 025

supersedes 12,82
company Volvo
engine: TAMD 40 B (121 kW)

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,2 mm $\pm 0,02$ (0,04)

see VDT-W-460/

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	2,6-3,0 mm		
1.2 Supply pump pressure	1500	6,2-6,8 bar (kgf/cm ²)		
1.3 Full-load delivery without charge-air pressure	1500	78,0-79,0 cm ³ /1000 strokes		3,0(3,5)
Full-load delivery with charge-air pressure	-	- cm ³ /1000 strokes		
1.4 Idle speed regulation	400	8,5-12,5 cm ³ /1000 strokes		3,0(3,5)
1.5 Start	100	min. 60 cm ³ /1000 strokes		
1.6 Full-load speed regulation	1900	43,5-49,5 cm ³ /1000 strokes		
1.7 Load-dependent start of delivery	-	-		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 0,7-1,5(0,4-1,8)	1500 (2,1-3,5)	1750 3,6-4,4(3,3-4,7)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 2,3-2,9		1750 7,1-7,7
Overflow delivery	n = rev/min cm ³ /10 s	600 55-138(40-153)		1800 55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2130 2050 1900 1770 1500 600	max. 2,5 6,5-12,5(5,0-14,0) (42,0-51,0) 72,8-75,8 (71,6-77,0) (75,8-81,2) 66,5-70,5 (65,1-71,9)	
switch-off			
Idle stop	580 500 400	0 max. 2,0 (6,0-15,0)	
End stop	120 220	min. 60 max. 60	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	-
KF	5,9-6,1
MS	0,9-1,1
SVS	max. 2,3
AK	18,7-20,7
B	
XL	10,9-14,2

Observations

2.4 Solenoid max. cut-in voltage xxxx min. 10 V
xxxxxx rated voltage 12V.

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Test Specifications

Distributor-type

Fuel-injection Pumps

VE 4/9 F 2200 R 69

0 460 494 055

supersedes 6.82

company: Renault

engine: J 8 S - 702

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting - mm

see VD1-W-460/

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1400	3,9-4,3 mm	0,74	
1.2 Supply pump pressure	1400	5,1-5,7 bar (kgf/cm ²)	0,74	
1.3 Full-load delivery without charge-air pressure	600	32,5-35,5 cm ³ /1000 strokes	0	2,5
Full-load delivery with charge-air pressure	1400	51,0-52,0 cm ³ /1000 strokes	0,74	
1.4 Idle speed regulation	350	9,0-13,0 cm ³ /1000 strokes	0	2,5
1.5 Start	100	min. 60,0 cm ³ /1000 strokes	0	
1.6 Full-load speed regulation	2400	23,0-29,0 cm ³ /1000 strokes	0,74	
1.7 Load-dependent start of delivery	-	-		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 1,8-2,6(1,5-2,9)	1400 (3,4-4,8)	1800 5,6-6,4(5,3-6,7)	2000 6,2-7,0(5,9-7,8)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 1,9-2,5	1800 6,3-6,9		
Overflow delivery	n = rev/min cm ³ /10 s	500 55-138(40-153)	2200 55-138(40-153)		

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2700	max. 2,0	0,74
	2500	max. 17,5	0,74
	2400	(22,0-30,0)	0,74
	2200	43,0-46,0 (42,2-46,8)	0,74
	2000	44,0-46,0 (42,7-47,3)	0,74
	1400	(49,2-53,8)	0,74
	1000	45,5-48,5 (44,7-49,3)	0,74
	700	37,5-40,5 (36,7-41,3)	0,2
	600	(31,3-37,0)	0
switch-off	2200		
Idle stop	480	max. 2,0	
	375	4,0-8,0 (2,0-10,0)	
	350	(7,0-15,0)	
End stop	180	min. 40	
	300	max. 40	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,7-5,9
MS	1,4-1,6
SVS	max. 5,3
AK	20,2-22,2
XL	9,1-12,4

Observations

2.4 Solenoid	max. cut-in voltage xxx min. 10,0 V
	max. rated voltage 12V.

Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 STE 6,5d

1. Edition

En

VE 6/12 F1100 R 122

0 460 426 029

supersedes

company: Steyr

engine: WD 612.87

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	800	4,8-5,2 mm		
1.2 Supply pump pressure	800	5,8-6,4 bar (kgf/cm ²)		
1.3 Full-load delivery without charge-air pressure	1080	80,8-81,8 cm ³ /1000 strokes		3,5
Full-load delivery with charge-air pressure	-	- cm ³ /1000 strokes		
1.4 Idle speed regulation	300	14,0-18,0 cm ³ /1000 strokes		3,5
1.5 Start	100	min. 95,0 cm ³ /1000 strokes		
1.6 Full-load speed regulation	1200	11,0-17,0 cm ³ /1000 strokes		
1.7 Load-dependent start of delivery				

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	500 1,3-2,1(1,0-2,4)	800 (4,3-5,7)	1080 6,9-7,7(6,6-8,0)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	500 4,3-4,9		1080 7,2-7,8
Overflow delivery	n = rev/min cm ³ /10 s	500 55-138(40-153)		1100 55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)	3. Dimensions Designation	for assembly and adjustment mm
End stop	1250 1200 1150 1080 800 500	max. 1,0 (9,0-19,0) 45,5-54,5 (45,0-55,0) (78,0-84,3) 80,0-82,0 (78,0-84,0) 78,5-81,5 (76,3-83,7)		K KF MS SVS	3,2-3,4 5,7-6,0 1,5-1,5 max. 6,0
switch-off	1100	0		A B	
Idle stop	450 350 300	max. 1,0 0,5-6,5 (11,0-21,0)		Observations	
End stop	180 280	min. 100 max. 75			
2.4 Solenoid	max. cut-in voltage test voltage				

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Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 5,8 q 8
2. Edition

VA 6/10 H 1150 CR 87-3
0 460 306 260

supersede 2.83
company IHC
engine D 358

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

Pre-stroke setting mm
Setting of the pointer at a stroke of 1 mm in
relation to outlet "A".

All test specifications are valid for
Bosch Fuel Injection Pump Test Benches
and Testers
Test Instructions and Test Equipment
VDT-WPP 161/4 B
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm ²	Difference in delivery cm ³
1 1 Timing device travel	700	2,4-3,2 mm		
1 2 Supply pump pressure	700	4,9-5,4 kp/cm ²		
1 3 Full-load delivery without charge-air pressure	700	69,5-70,5 cm ³ /1000 strokes		3,0
Full-load delivery with charge-air pressure	-	- cm ³ /1000 strokes		
1 4 Idle speed regulation	400	16,0-22,0 cm ³ /1000 strokes		3,0
1 5 Start	100	min. 70,0 cm ³ /1000 strokes		
1 6 Full-load speed regulation	1200	36,0-44,0 cm ³ /1000 strokes		

2. Test Specifications

Checking values in brackets

2 1 Timing device	rev/min	500	700	1150
	mm	0,6-1,6 (0,4-1,8)	(2,1-3,5)	5,2-5,9 (4,8-6,2)
2 2 Supply pump	rev/min	200	700	1150
	kp/cm ²	2,1-2,6 (1,9-2,8)	(4,7-5,6)	6,6-7,1 (6,4-7,3)
Overflow delivery	rev/min			
	cm ³ /10 s			

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes	Charge-air pressure kp/cm ²
End stop	Full	1250-1300	0	
		1200	(34,0-46,0)	
		1150	70,0-73,0 (69,0-74,0)	
		700	(69,0-71,0)	
		500	66,0-70,0 (65,0-71,0)	
	Stop	1150	0	
Idle stop	Full	530-580	0	
		400	(14,0-24,0)	
	Start	100	min. 70,0	

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2.83

Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 42 \pm 8^\circ$ $\gamma = 30 - 8^\circ$ $\delta = 60 + 8^\circ$	Pump = 3,8 Dimension IV = 24,65 mm Dimension V

65 KW (88 PS)

0 - 72-144-216-288 - 0,50 (0,75)
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

КА

1. ** Set the idle auxiliary spring at $n = 385 \text{ min}^{-1}$ so that the control-rod travel is exceeded by 0.1 - 0.2 mm.
2. Setting the idle control-lever position:
At 1000 min^{-1} , control rod travel 1.9 - 2.0 mm
3. Check the idle auxiliary spring shutoff
Control-lever position 47° . After change-over point up to 550 min^{-1} no change in control-rod travel. Control-lever position 30° . Speed range $350 \text{ min}^{-1} - 450 \text{ min}^{-1}$
4. Check the pneumatic shutoff box
Control lever at idle stop.
At $n = 375 \text{ min}^{-1}$ and $p_u = 450 \text{ mbar}$ (vacuum) (338 mmHg) the control rod must return quickly to control-rod travel = 0 mm.

WPP 001/4 MB 3.0 o 1

1. Edition

En

supersedes —

company **Daimler-Benz**

engine. OM 617 (65 KW)

PES 5 M 55 C 320 RS 108-1

RSF 350/2300 M 15

Komb. Nr. 0 400 075 991

Sales model

0 400 075 989

1 - 2 - 4 - 5 - 3

Q - 72-144-216-288

0 - 72-144-216-288
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke	2,20-2,30 [†] (2,15-2,35)	mm (from BDC)	20 mm	Control rod travel
---------------------------	---------------------------------------	---------------	-------	--------------------

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (Compensating valve)
rev/min	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm
1	2	3	4	2	3	6
1000	13,9 ^{+0,1}	3,9 - 4,0	0,25 (0,3)			
350	6,5-6,7	0,6 - 0,7	0,1 (0,15)			
1800			0,25 (0,3)			
2200			0,25 (0,3)			

Set uniform delivery according to the values in

Checking values in brackets

B. Governor Settings

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever	Control rod travel mm	Rotational speed rev/min	Degree of deflection of control lever	Control rod travel mm	Rotational speed rev/min		Rotational speed rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
9-13	min. 10,5	250	50	13,0-13,2	2200		100	min. 20,3
	max. 10,0	300		9,1-9,5	2500		1800	13,5-13,7
	6,5-6,7	350		-	-		1000	13,9-14,0
	**	385						
	-	-						
	2,5	720-820		0-1,0	2950		Switching point	

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery		Full-load speed regulation		Variations in fuel delivery		Starting fuel delivery		Difference
rev./min	cm ³ /1000 strokes	rev./min	cm ³ /1000 strokes	rev./min	cm ³ /1000 strokes	rev./min	cm ³ /1000 strokes	
2200	39,5-41,5 (38,5-42,5)	2500*	1800	39,0-41,0 (38,0-42,0)	100	min. 53,0	6,0	See 8 a
		RW=9,1-9,5	1000	39,0-40,0 (38,0-41,0)	350	6,0-7,0 (5,5-9,0)	1,0 (1,5)	
					2500	23,0-27,0 (22,0-28,0)	2,5	

Checking values in brackets

Ca²⁺ mg 4.6XXXXX (red travel) than in Ca²⁺ mg 2

5.33

BOSCH

Bundesministerium der Finanzen
Postfach 10 15 53 · D-53005 Bonn
Telefon (0228) 91-23 70

443

K13

1. ** Set the idle auxiliary spring at $n = 385 \text{ min}^{-1}$ so that the control-rod travel is exceeded by 0.1 - 0.2 mm.

2. Setting the idle control-lever position:

At 1000 min^{-1} , control rod travel 1.9 - 2.0 mm

3. Check the idle auxiliary spring shutoff

Control-lever position 47° . After change-over point up to 550 min^{-1} no change in control-rod travel. Control-lever position 30° . Speed range $350 \text{ min}^{-1} - 450 \text{ min}^{-1}$

4. Check the pneumatic shutoff box

Control lever at idle stop.

At $n = 375 \text{ min}^{-1}$ and $p_u = 450 \text{ mbar}$ (vacuum) (338 mmHg) the control rod must return quickly to control-rod travel = 0 mm.

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 1,8 r 4

1. Edition

En

PES 4 A 50 D 410 RS 1025 RSV 650-1200 A 5 B 729 L

Komb.-Nr. 0 400 474 154

supersedes

company Daimler-Benz

engine OM 636

34 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (1,65-1,85) mm (from BDC) RW 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1180	13,6+0,1	2,9 - 3,0	0,2(0,25)			
650	9,9-10,1	1,1 - 1,2	0,15(0,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
Loose	1000	0,3-1,0	-	-	-	ca. 34	650	9,5	1180	13,6-13,7
	x = 4,5						100	min. 19,5	400	14,5-15,1
							650	9,9-10,1	500	13,6-13,8
ca. 57	12,6	1220-1230					865-925	= 2,0		
2a	4,0	1365-1395								
	1450	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp 40°C (104°F)		Note: changed to rev/min							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
1180	29,0 - 30,0 (28,0 - 31,0)	1220-1230*	-	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

4.83

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K15

K15

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MWM 6,2 e

1. Edition

En

PES 6 A 90 D 320/3 RS 2660 RSV 325-1500 A 2 B 505 - 2 R

supersedes
company MWM
engine D 226-6

Komb.-Nr. 0 400 866 112

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,95-3,05
(2,90-3,10) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1500	10,5+0,1	9,0 - 9,1	0,3 (0,5)			
325	6,4-6,6	1,1 - 1,7				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 27	325	6,0	-	-
	x = 5,5						325	6,4-6,6		
ca. 66	9,5	1540-1550					460-520	= 2,0		
2a	4,0	1615-1645								
	1780	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp. 40°C (104°F)		Note changed to ... rev/min							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1500	89,5 - 90,5 (87,5 - 92,5)	1540-1550*		-	-	100	19,5-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

4.83

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K16

K16

Testoil-ISO 4113

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 17,4 b 1

En

1. Edition

PE 10 P 120 A 520/4 LS 850 RQV 250-1150 PA 647

1- 8- 7- 6 - 3 - 5 - 2 - 10- 9- 4

0-27-72-99 -144-171-216-243-288-315° $\pm 0,5^\circ$ ($\pm 0,75^\circ$)

supersedes

company: MAN

engine: D 2540 MLE
405 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{3,0-3,1}{(2,95-3,15)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,2 \pm 0,1	18,5-18,8	0,4(0,9)			
250	6,2-6,4	1,2-1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1200	15,2-17,8	-	-	-	ca. 12	100 250 410-470=2,0	min. 7,8 6,2-6,4	200 520 830 1150	0,6-0,8 4,9-5,2 6,1-6,4 7,5
ca. 63	10,2 4,0 1400	1190-1200 1255-1285 0-1,0				3a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1150	1,0 bar 185,0-188,0 182,0-191,0)	1190-1200*	LDA 500	0 bar 119,0-122,0 (116,0-125,0)	100	205,0-225,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067.

BOSCH

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2.33

K17

K17

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

MAN 17,4 b 1

-2-

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE 10 P..LS 850 +RQV.. PA 647	1,0	0 0,65 0,54	11,2-11,3 9,6-9,7 10,8-10,9 10,0-10,3

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

①

Test Specifications

Fuel Injection Pumps ① and Governors

WPP 001/4 MB 14,6 o

2. Edition

En

PE 8 P 120 A 320 LS 3816 RQV 350-1150 PA 590
 1 - 8 - 7 - 2 - 6 - 3 - 54 je $45^\circ \pm 0,5^\circ (\pm 0,75^\circ)$
 Values only apply to test nozzle-and-holder
 assembly 1 688 901 019 and fuel-injection test
 tubing 1 680 750 067.

superseded 10.82

company Daimler Benz

engine OM 422 A

243 kW (330 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke $4,0 - 4,1$ (3,95-4,15) mm (from BDC)						
Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm
1	2	3	4	2	3	6
1150	11,0+0,1	15,8-16,0	0,5(0,9)			
350	4,9-5,1	1,2-1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1150	15,2-17,8	-	-	-	ca. 10	100	min. 6,0	300	0,6-0,9
ca. 63	10,0	1190-1200					350	4,5-4,6	580	3,6-3,8
	4,0	1270-1300							870	5,2-5,4
	1400	0 - 1,0				370-480			1150	7,6
						③a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 1150	0,7 bar 158,0-160,0 (155,0-163,0)	1190-1200*	LDA 600	0,7 bar 166,0-172,0 (163,0-175,0)	100	140,0-160,0	1050	11,0+0,1
			LDA 500	0 bar 140,0-142,0 (137,0-145,0)			850	11,4+0,1
							750	11,5+0,2

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.83

K19

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K19

D. Adjustment Test for Manifold Pressure Compensator

Test at $n =$ 500 rev/min decreasing pressure - in bar gauge pressure
increasing

MB 14,6 o

-2-

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE 8 P..LS 3816 + ..PA 590	0,47	0,70 0 0,40	11,4-11,5 11,6-11,7 10,5-10,6 10,9-11,0

Notes

(1) when $n =$

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 12,0 d 1

3. Edition

En

PE 6 P 120 A 320 RS 3050

ROV 250-1100 PA 611

 superseded 282
 company Volvo
 engine TD 120 F

Values only apply to test nozzle-and-holder
 assembly 1 688 901 019 and fuel-injection test
 tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke $\frac{2,4-2,5}{(2,35-2,55)}$ mm (from BDC) = RW 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,1+0,1	24,2-24,5	0,5(1,9)			2,5 \pm 0,1 (2,2-2,9)
250	3,8-4,0	2,2-2,6	0,5(0,7)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1180	15,2-17,8	-	-	-	ca. 7	100	min. 5,3	200	0,7-0,9
ca. 65	12,1 4,0 1350	1160-1170 1225-1255 0 - 1,0					250 290-350	3,8-4,0 =2,0	500 660- 1040 1100	4,2-4,8 6,4-6,6 7,3

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed limitation intermediate speed ②b	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 700	1,2 bar 241,5-244,5 (238,5-247,5)	1160-1170*	LDA 700	0 bar 142,5-146,5 (139,5-149,5)	100	20,0-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2
1.83

Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

VOL 12,0 d 1 -2-

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE 6 P ..RS 3050 + RQV.. PA 611	0,67	1,2 0 0,30	12,2-12,3 13,1-13,2 9,2- 9,3 10,5-10,7

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 8,8 d 1

1. Edition

En

PES 6 P 120 A 320 RS 419 RQV 275-1100 PA 495

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

supersedes

company: RVI

engine: MIDR 062045

206 kW (280 PS)

Komb.-Nr.

0 402 046 249

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke $2,8 - 2,9$
(2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	10,3+0,1	17,7 - 18,1	0,4(0,8)			
275	3,4-3,6	0,5 - 1,1	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca. 8	100	min. 5,0	250	1,0-1,2
ca. 64	9,3	1155-1165				280-395	275	3,4-3,6	530	4,0-4,6
	4,0	1220-1250							820	5,9-6,1
	1350	0 - 1,0							100	8,1

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1100	0,7 bar 177,0-181,0 (174,0-184,0)	1155-1165*	LDA 700	0,7 bar 163,0-196,0 (160,0-172,0)	100	130,0-150,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

2.83

K23

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K23

D. Adjustment Test for Manifold Pressure Compensator

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure increasing

RVI 8,8 d 1

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES 6 P..RS 419 + RQV..PA 495	0,25	0,70 0 0,20	9,7 - 9,8 10,3 - 10,4 8,3 - 8,5 8,8 - 9,0

Notes:

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 SCA 8,0 1
2. Edition

En

PE 6 P 110 A 720 RS 3076
Komb.-Nr. 0 401 876 721

RSV 350-1200 P1/462

supersedes 10.82
company Scania
engine D S 8

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,3-3,4
(3,25-3,45) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	11,9+0,1	12,1-12,3	0,4(0,8)			2,5 [±] 0,1 (2,2-2,9)

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			4 Lower rated speed Control-lever deflection in degrees 7			3 Torque control Control rod travel rev/min mm 10 11	
	Control rod travel mm 2	Control rod travel mm rev/min 3					rev/min 8	Control rod travel mm 9		
loose	800	0,3-1,0	-	-	-	ca.24	350	4,4	-	-
	X= 4,0						100	min.20,0		
							350	4,8-5,0		
Ca.62	10,9	900-905								
2a	4,0	935-945								
	1450	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full load stop Test oil temp 40°C (104°F) rev/min 1		6 Rotational speed limit Note changed to rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery 5 idle rev/min 6		4a Idle stop rev/min 8		Control rod travel mm 9
	cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes 7			
850	121,0-123,0 (119,0-125,0)	900-905*	-	-	-	100	190,0-240,0 20,0- 21,0 mm RW	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

6.33

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Testoil-ISO 4113

L1

L1

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 BET 8,8 a

2. Edition

En

PE 6 P 120 A 320 RS 383 RQV 250-1200 PA 425 R

supersedes 2.82

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067.

company: RVI

engine: MIDS 062030

165,5 kW (225 PS)

Komb.-Nr.

0 401 846 404

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke $2,8 - 2,9$
(2,75-2,95) mm (from BDC) = RW 9,0 - 12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1200	13,9+0,1	14,8 - 15,1	0,5(0,9)			
275	4,7-4,9	0,8 - 1,4	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1240	15,2-17,8	-	-	-	ca. 12	100	min. 6,3	200	0,2-0,6
ca. 66	12,9	1245-1255					275	4,7-4,9	530	2,9-3,1
	4,0	1340-1370							870	4,8-5,0
	1500	0 - 1,0							1200	8,0
						3a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed intermediate speed	Fuel delivery characteristics high idle speed	Starting fuel delivery idle switching point	Torque-control travel
rev/min	cm ³ /1000 strokes	rev/min	rev/min	rev/min	rev/min
1	2	3	4	6	8
LDA 1200	0,7 bar 148,0-151,0 (145,0-154,0)	1245-1255*	LDA 700 0,7 bar 144,0-148,0 (141,0-151,0)	100 120,0-140,0 = RW 19,5 - 21,0 mm	-
					Control rod travel mm
					9

Checking values in brackets

* 1 mm less control rod travel than col. 2

2.83

L2

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L2

D. Adjustment Test for Manifold Pressure Compensator

BET 8,8 a - 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE 6 P..RS 383 + RQV..PA 425 R	0,23	0,70 0 0,19	13,4 - 13,5 13,9 - 14,0 12,2 - 12,3 12,6 - 12,8

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 BRE 9,6 c
1. Edition

PE 6 P 120 A 320 RS 461 RQV 300-1500 PA 500

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067.

supersedes
Breda
company ID 32
engine 243 kW

Komb.-Nr.
0 401 846 478

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke ^{3,5-3,6}
(3,45-3,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1500	10,0+0,1	14,5-14,9	0,5(0,9)			
300	7,1-7,3	1,5-2,1	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	①a Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③	rev/min 10	mm ① 11
max.	1500	15,2-17,8	-	-	-	ca.14	100 300	min.8,7 7,1-7,3	250 670 1080 1500	1,0-1,2 3,8-4,0 5,9-6,1 8,8
ca. 62	9,0 4,0 1750	1540-1550 1625-1655 0 - 1,0				335-450 ③a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed ②b intermediate speed ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery Idle switching point ⑥	Torque-control ⑤ Control rod travel mm ⑨	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8
1500	145,0-149,0 (142,0-152,0)	1540-1550*	-	-	100	19,5-21,0 mm RW	-

Checking values in brackets

* 1 mm less control rod travel than col 2

2.83

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①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 BRE 30,8 a

1. Edition

En

PE 8 P 130 A 520/6 LS 450 RQV 300-900 PA 500

1-2-6-3-4-5-7-8 je 45° $\pm 0,5^\circ$ ($\pm 0,75^\circ$)

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067.

supersedes

company Breda

engine: ID 36 N 8 V

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Komb.-Nr.

0 401 838 020

A. Fuel Injection Pump Settings

Port closing at prestroke 3,5-3,6
(3,45-3,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	9,2-9,3	16,5-16,8	0,5(0,9)			
300	6,8-7,0	2,2-2,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	990	15,2-17,8	-	-	-	ca.16	100 300	min.8,4 6,8-7,0	250 470 680 900	1,0-1,3 3,8-4,4 5,6-5,8 7,6
ca. 57	8,2 4,0 1150	940-950 1000-1030 0-1,0				300-395 (3a)				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a) rev/min	Fuel delivery characteristics (5a) high idle speed (5b) rev/min		Starting fuel delivery Idle switching point (6) rev/min		Torque-control travel Control rod travel mm (5) rev/min	
1 rev/min	cm ³ /1000 strokes 2	3 rev/min	4 rev/min	5 cm ³ /1000 strokes	6 rev/min	7 cm ³ /1000 strokes	8 rev/min	9 mm
900	165,0-168,0 (162,0-171,0)	940-950*	-	-	100	19,5-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

2.33

L5

L5

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①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 BRE 9,7 a

1. Edition

En

PE 6 P 120 A 320 RS 460 RQV 300-1500 PA 500

1- 2- 3 - 4 - 5 - 6
0-45-120-165-240-285 ° ± 0,5 ° (± 0,75 °)supersedes
Breda
company 10 38
engine 367,5 kWKomb.-Nr.
0 401 846 477

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,5-3,6
(3,45-3,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1500	10,0+0,1	14,6-14,9	0,5(0,9)			
300	7,8-8,0	1,4-2,0	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1500	15,2-17,8	-	-	-	ca.18	100 300	min.9,4 7,8-8,0	250 670 1080 1500	1,6-1,8 4,0-4,2 6,2-6,4 9,1
ca.63	9,0 4,0 1750	1540-1550 1625-1655 0 - 1,0				335-440 ③a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1500	146,0-149,0 (143,0-152,0)	1540-1550*	-	-	100	19,5-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067.

2.93

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Testoil-ISO 4113

①

Test Specifications

Fuel Injection Pumps ① and Governors

WPP 001/4 BRE 23,1 a

1. Edition

En

PE 6 P 130 A 320/3 LS 449

RQV 300-900 PA 500

supersedes

Breda

company

ID 36 N 6 V

engine

225 kW

1 - 6 - 5 - 4 - 3 - 2

0 -75 -120-195-240-315° ± 0,5° (± 0,75°)

Values only apply to test nozzle-and-holder

assembly 1 688 901 019 and fuel-injection test

tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Komb.-Nr.

0 401 836 022

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke

3,5 - 3,6
(3,45-3,65)

mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
900	9,2-9,3	16,5-16,8	0,5 (0,9)			
300	6,8-7,0	2,2-2,8	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	990	15,2-17,8	-	-	-	ca. 16	100	min. 8,4	250	1,0-1,3
ca. 57	8,2	940-950					300	6,8 - 7,0	470	3,8-4,4
	4,0	1000-1030							680	5,6-5,8
	1150	0-1,0				300-395			900	7,6

Torque control travel s =

mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics (5a) high idle speed (5b)		Starting fuel delivery idle switching point (6)	Torque-control travel (5)		
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
900	165,0-168,0 (162,0-171,0)	940-950*	-	-	100	19,5-21,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

2.83

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L7

L7

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 17,4 b 2

1. Edition

En

PE 10 P 120 A 520/4 LS 850 RQV 250-1150 PA 645

supersedes

company MAN

1- 8- 7- 6- 3 - 5 - 2 - 10- 9 - 4

0-27-72-99-144-171-216-243-288-315° $\pm 0,5^\circ$ ($\pm 0,75^\circ$)

engine: D 2540 MLE

405 kW (551 PS)

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test

0 401 849 165

tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

 Port closing at prestroke $3,0-3,1$ mm (from BDC) Zyl. 10
 $(2,95-3,15)$

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1150	11,2+0,1	18,6-18,9	0,5(0,8)			
250	6,1-6,3	1,4-2,0	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1200	15,2-17,8	-		-	ca. 11	100	min. 7,7	200	0,6-0,8
Ca. 63	10,2	1190-1200					250	6,1-6,3	520	4,8-4,9
	4,0	1255-1285					380-440	= 2,0	830	5,9-6,2
	1400	0 - 1,0							1150	7,9

Torque control travel s = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1150	186,0-189,0 (183,0-192,0)	1190-1200 *	-	-	100	270,0-290,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

2.83

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①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 FIA 13,8 a 7

1. Edition

En

PE 6 P 120 A 720 RS 167 RQV 225-1100 PA 337 R

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes -

company: Fiat

engine: 221 A/8210.02.022

184 kW

Komb.-Nr. 0 401 846 361

0 401 846 454

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke $2,0 - 2,1$ mm (from BDC)
(1,95-2,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	10,7+0,1	16,8 - 17,1	0,5(0,9)			
225	7,5-7,7	1,7 - 2,3	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1100	15,2-17,8	-	-	-	ca. 13	100 225	min. 9,1 7,5-7,7	200 500 800 100	0,7-0,8 2,7-3,0 4,6-4,9 8,0
ca. 60	9,7 4,0 1350	1140-1150 1200-1230 0 - 1,0				295-410				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)	Torque-control travel (5)		
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1100	168,0-171,0 (165,0-174,0)	1140-1150*	-	-	100	19,5-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.83

L9

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L9

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 BAO 15,9 a

1. Edition

En

PES 6 P 130 A 320 RS 3093 RQV 350-900 PA 618

Komb.-Nr. 0 402 046 730

supersedes

 company: Baudouin
 6 P 15-SRCE
 engine: 295 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke ^{3,2-3,3}
 (3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	11,7+0,1	32,8-33,2	0,5(0,8)			
350	3,9-4,1	20,0-2,6	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	950	15,2-17,8	-	-	-	ca. 22	100 350	min. 5,5 3,9-4,1	300 500 700 900	0,7-1,0 3,1-3,8 5,5-5,9 8,0
ca. 60	10,7 4,0	940-950 1000-1030				350-450				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Torque-control	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
900	328,0-332,0 (325,0-335,0)	940-950 *	-	-	100	19,5-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

5.83

Testoil-ISO 4113

L10

L10

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①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 FIA 8,1c

En 1. Edition

PES 6 MW 90/720 RS 1005

RQV 300-1300 MW 9 DR

0 403 446 107

supersedes

company: Fiat

engine: 8360.05.670

117,7 kW (160 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke $5,10-5,20$
 $(5,05-5,25)$ mm (from BDC) RW = 5,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	11,7+0,2	8,9-9,1	0,3(0,5)			
300	3,8-4,0	0,95-1,35	0,3(0,5)			
800	12,4+0,2	8,9-9,1	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1300 1480	15,2-17,8 0-1,0	-	-	-	ca.21	300 100	3,8-4,0 min.7,0		
ca.60°	10,8 4,0	1350-1360 1420-1460				3a	350-390=2,0			

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2		Rotational speed limitation intermediate speed 2b		Fuel delivery characteristics high idle speed 5a		Starting fuel delivery idle switching point 6		Torque-control travel 5	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	4a	rev/min 4	cm ³ /1000 strokes 5b	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1300	89,0-91,0 (88,0-92,0)	1350-1360*		800	89,0-91,0 (88,0-92,0)	100	20,0-21,0 (min. 130)	900 1200	12,4+0,2 11,7+0,2

Checking values in brackets

* 1 mm less control rod travel than col. 2

①

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 11,0 w 1

2. Edition

40

En

US-PES 6 P 110 A 720 RS 6005 US-RQV 300/600-1050 PA 586-2K ^{supersedes} 3.83
 Komb.-Nr. 9 400 231 131 PLE-Maß = 0,740" - 0,820" company Mack
 Note VDT-I-MAC 002! engine EM 6 - 285
 Values only apply to test nozzle-and-holder assembly 0 681 343 009 285 PS
 and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,75- 2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	13,4+0,1	21,2 - 21,4	0,4			
300	5,3-5,5	2,0 - 3,0	0,4			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1120	15,2-17,8				ca. 20	250	9,8-11,3		
							300	7,9-8,1		
ca. 62	12,4	1090-1100					400	3,8-5,2		
	4,0	1185-1215					690-750 = 2,0			
	1240	0 - 1,0				3a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1000	211,5-213,5	1090-1100*	800	213,0-216,0	100	110,0-170,0	1050	13,3+0,1
			600	242,0-245,0			1000	13,4
				PLE			800	13,8+0,1
			800	147,0-155,0			700	14,5+0,1
							600	14,9+0,1
							500	14,9-0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

6.83

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L12

L22

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 40,5 a 3

1. Edition

En

PE 8 P 120 A 920/5 RS 293 RS 250/1000 P 1/422 R

1 - 6 - 4 - 5 - 8 - 3 - 2 - 7
0 - 75-90 -120-210-225-315-345 ° $\pm 0,5^\circ$ ($\pm 0,75^\circ$)

supersedes
KHD
company BA 16 M 816
engine
Komb.-Nr. 0 401 878 096

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,0-2,1}{(1,95-2,15)}$ mm (from BDC) = RW 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	14,9 \pm 0,1	31,0-31,4 (30,7-31,7)	0,5 (0,9)			
250	6,3-6,5	2,2-2,8	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
Loose	800	0,3-1,0 x = 5,0	-	-	-		250	6,4	1000	14,9-15,0
							390-450	2,0	420	16,2-16,8
									550	14,9-15,0
VHca.58 F ₂ max.	13,9	1040-1050				150-200				
2a	4,0	1105-1135								
	1200	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp 40°C (104°F)		Note: changed to)							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
		1040-1050*	-	-	-	100	19,5-21,0 mm RW	-	-
Carry out adjustment on engine									

Checking values in brackets

* 1 mm less control rod travel than col 2

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5.83

L13

L13

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 40,5 a 2

1. Edition

En

PE 8 P 120 A 920/5 RS 293 RSUV 300-750 P 9 A 322

1 - 6 - 4 - 5 - 8 - 3 - 2 - 7

0 -75 -90 -120-210-225-315-345° $\pm 0,5^\circ$ ($\pm 0,75^\circ$)

supersedes

KHD

company BA 16 M 816

Reg.-Nr. 0 401 878 083

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $(1,95-2,15)$ mm (from BDC) = RW 9,0-12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
750	14,9 \pm 0,1	29,6-30,0 (29,3-30,3)	0,5 (0,9)			
300	6,1-6,3	2,2-2,6	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
Loose	800	0,3-1,0	-	-	-	ca. 26	300	5,7	750	14,9-15,0
	x = 4,0						300	6,1-6,3	280	16,2-16,8
							325-385	2,0	400	14,9-15,0
ca. 62	13,9	790-800								
2a	4,0	820-850								
	985	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to							
rev/min	cm ³ /1000 strokes	rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
		790-800*				100	19,5-21,0 mm RW		
Carry out adjustment on engine									

Checking values in brackets

* 1 mm less control rod travel than col. 2

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5.33

L14

L14

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 40,5 a 1

1. Edition

En

PE 8 P 120 A 920/5 RS 293 RSUV 300-600 P8A 322 R

1 - 6 - 4 - 5 - 8 - 3 - 2 - 7
0 - 75- 90-120-210-225-315-345⁰ $\pm 0,5^0$ ($\pm 0,75^0$)

supersedes

company KHD

engine: BA 16 M 816

Komb.-Nr. 0 401 878 099

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,0 - 2,1$
(1,95-2,15) mm (from BDC) = RW 9,0 - 12,0 mm

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	14,9+0,1	29,0-29,4 (28,7-29,7)	0,5(0,9)			
300	5,9-6,1	2,1-2,7	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 30	300	5,5	600	14,9-15,0
	x = 4,0						300	5,9-6,1	220	16,2-16,8
							310-370	= 2,0	350	14,9-15,0
ca. 65	13,9	640-650								
2a	4,0	660-690								
	825	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to 1 rev/min							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
		640-650*				100	19,5-21,0 mm RW		
Carry out adjustment on engine									

Checking values in brackets

* 1 mm less control rod travel than col. 2

5.83

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L15

L15

Test specifications

Fuel injection pumps and governors

WPP 001/4 MTU 39,7 c

1. Edition

En

PE 12 ZW 160/120 RS 1029/11 RQUV 300-1200 ZWA 51 R
 Komb.-Nr. 0 402 430 009
 1 - 12- 9 - 4 - 5 - 8 - 11- 2 - 3 - 10- 7 - 6

Replaces -
 Firm: MTU
 Engine: 331

0 - 45- 60-105-120-165-180-225-240-285-300-345⁰ ± 0,5⁰ (± 0,75⁰)

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings

Port closing at prestroke $2,5 - 2,6$ mm (from BDC) Cyl. 12; control rod in center position
 (2,45-2,65)

Rotational speed min ⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm ³ /1000 strokes 3	Difference in fuel delivery cm ³ /1000 strokes 4	Fuel delivery Checking values cm ³ /1000 strokes 5	Spring pre-tension (torque-control valve)
600	18,0+0,1	513,0-523,0	22,0(33,0)	510,0-526,0	
600	9,0-9,1	140,0-160,0	12,0(18,0)	135,0-165,0	
300	9,0-9,1	72,0-92,0	11,0(16,0)	67,0-97,0	

Adjust the fuel delivery from each outlet according to the values in

B. Governor settings

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees 1	mm min ⁻¹ 2	Control-rod travel mm mm 3	Control lever deflection degrees 4	mm min ⁻¹ 5	Control-rod travel mm mm 6	Control lever deflection degrees 7	mm min ⁻¹ 8	Control-rod travel mm mm 9	mm min ⁻¹ 10	Control-rod travel mm mm 11
ca. 84	1200	18,0-19,0	ca. 27	375	8,0	ca. 21	300	8,0	-	-
	17,0	1205-1225		200	14,3-17,2		200	10,8-14,2		
	4,0	1320-1380		300	10,3-11,8		400	3,9-5,0		
	1400	0 - 2,0		500	2,5-3,7		485-590=0			
				590-720=0						

Torque control travel dimension a = mm

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed		Fuel-delivery characteristics		Starting fuel delivery	
min ⁻¹ 1	cm ³ /1000 strokes 2	min ⁻¹ 3		min ⁻¹ 4	cm ³ /1000 strokes 5	min ⁻¹ 6	cm ³ /1000 strokes 7
Not known. Carry out adjustment on engine.							

Checking values in brackets

5.33

Testoil-ISO 4113

Test specifications

Fuel injection pumps

and governors

WPP 001/4 MTU 26,5 b

1. Edition

En

PE 8 ZW 160/120 RS 1027/11 RQUV 300-1200 ZWA 51 R
 Komb.-Nr. 0 402 438 024
 1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 je $45^0 \pm 0,5^0 (\pm 0,75^0)$

Replaces

Firm: MTU

Engine 331

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings

Port closing at prestroke $2,5 - 2,6$ mm (from 829) 1. 8; control rod in center position
 (2,45-2,65)

Rotational speed min ⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm ³ /1000 strokes 3	Difference in fuel delivery cm ³ /1000 strokes 4	Fuel delivery Checking values cm ³ /1000 strokes 5	Spring pre-tension (torque-control valve)
600	18,0+0,1	513,0-523,0	16,0(24,0)	510,0-526,0	
600	9,0-9,1	140,0-160,0	12,0(18,0)	135,0-165,0	
300	9,0-9,1	72,0-92,0	11,0(16,0)	67,0-97,0	

Adjust the fuel delivery from each outlet according to the values in

B. Governor settings

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees 1	mm min ⁻¹ 2	Control-rod travel mm 3	Control lever deflection degrees 4	min ⁻¹ 5	Control-rod travel mm 6	Control lever deflection degrees 7	min ⁻¹ 8	Control-rod travel mm 9	min ⁻¹ 10	Control-rod travel mm 11
ca. 84	1200	18,0-18,1	ca. 27	375	8,0	ca. 21	300	8,0	-	-
	17,0	1205-1225		200	14,3-17,2		200	10,8-14,2		
	4,0	1320-1380		300	10,3-11,8		400	3,9-5,0		
	1400	0 - 2,0		500	2,5-3,7		485-590	= 0		
				590-720	= 0					

Torque control travel dimension a = mm

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed		Fuel-delivery characteristics		Starting fuel delivery	
min ⁻¹ 1	cm ³ /1000 strokes 2	min ⁻¹ 3		min ⁻¹ 4	cm ³ /1000 strokes 5	min ⁻¹ 6	cm ³ /1000 strokes 7
Not known. Carry out adjustment on engine.							

Checking values in brackets

Testoil-ISO 4113

Test specifications

Fuel injection pumps and governors

WPP 001/4 MTU 39,7 b 1

1. Edition

En

PE 12 ZW 150/120 RS 1010/11 RQUV 300-1200 ZWA 51 R

Replaces

Firm: MTU

Engine: 12 V 331

1-12- 9- 4 - 5 - 8 - 11- 2 - 3 - 10- 7 - 6

0-45-60-105-120-165-180-225-240-285-300-345° $\pm 0,5^\circ$ ($\pm 0,75^\circ$) Komb.-Nr. 0 402 430 004

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings

Port closing at prestroke $\begin{matrix} 2,5 - 2,6 \\ (2,45 - 2,65) \end{matrix}$ mm (from BDC) **2yl. 12: control rod in center position**

Rotational speed min ⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm ³ /1000 strokes 3	Difference in fuel delivery cm ³ /1000 strokes 4	Fuel delivery Checking values cm ³ /1000 strokes 5	Spring pre-tension (torque-control valve)
1000	18,0+0,1	479,0-507,0	15,0 (22,0)	494,0 - 510,0	
600	9,0-9,1	131,0-151,0	16,0 (24,0)	126,0 - 156,0	
300	9,0-9,1	70,0-90,0	10,0 (15,0)	65,0 - 95,0	

Adjust the fuel delivery from each outlet according to the values in

B. Governor settings

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees 1	min ⁻¹ 2	Control-rod travel mm 3	Control lever deflection degrees 4	min ⁻¹ 5	Control-rod travel mm 6	Control lever deflection degrees 7	min ⁻¹ 8	Control-rod travel mm 9	min ⁻¹ 10	Control-rod travel mm 11
ca. 85	1200	18,0-21,0	ca. 30	250	12,2-14,6	ca. 23	150	4,3-16,1	-	-
	1250	12,2-16,8		375	6,0-7,2		300	7,3-8,6		
	1300	6,4-11,6		500	2,6-3,7		400	2,8-4,3		
	1350	0,4-6,4		600	0,8-2,1		570	0		
	1420	0-2,0		730	0					

Torque control travel dimension a = mm

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed	Fuel-delivery characteristics		Starting fuel delivery	
min ⁻¹ 1	cm ³ /1000 strokes 2	min ⁻¹ 3	min ⁻¹ 4	cm ³ /1000 strokes 5	min ⁻¹ 6	cm ³ /1000 strokes 7
Not known. Carry out adjustment on engine.						

Checking values in brackets

5.83

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 2,4 m1

1. Edition

En

PES 4 M 55 c 320 RS 107-1
RSF 375/2250 M 17

Komb.Nr. 0 400 074 956

Sales model

0 400 074 957

supersedes -

company Daimler-Benz

engine OM 616

53 kW (72 PS)

1 - 3 - 4 - 2

0 -90 -180-270

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

2,20-2,30
(2,15-2,35)

mm (from BDC)

20 mm

Control rod travel

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm
1	2	3	4	2	3	6
1000	13,9 ^{+0,1}	3,9-4,0	0,25(0,3)			
375	6,5-6,7	0,6-0,7	0,1 (0,15)			
1800			0,25(0,3)			
2200			0,25(0,3)			

Set uniform delivery according to the values in

Checking values in brackets

B. Governor Settings

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever	Control rod travel	Rotational speed	Degree of deflection of control lever	Control rod travel	Rotational speed		Rotational speed	Control rod travel
1	mm	rev/min	4	mm	rev/min	7	rev/min	mm
9-13	min. 11,5 max. 11,0	250	50	13,0-13,2	2200		100	min. 20,3
	6,5-6,7	300		8,7-9,1	2500		1800	13,3-13,5
	**	375		-	-		1000	13,9-14,0
	-	400		0-1,0	2950			
	2,5	-		-	-			
		720-820					Switching point	-

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery		Full-load speed regulation	Variations in fuel delivery		Starting fuel delivery		Difference	
Test oil temp 40°C (104°F)					Idle			
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	cm ³ /1000 strokes	
1	2	3	4	5	6	7	8	
2200	39,5-41,5 (38,5-42,5)	2500* RW 8,7-9,1	1800	39,0-41,0 (38,0-42,0)	100	min. 53,0	6,0	(2a)
			1000	39,0-40,0 (38,0-41,0)	375	6,0-7,0 (5,5-9,0)	1,0	
					2500	23,0-27,0 (22,0-28,0)	2,5	See 3 a (5)
							3,0	(16)

Checking values in brackets

Ca. 4,2 mm less control rod travel than in Column 2

5.33

BOSCH

Geschäftsbereich KH Kundendienst Kfz Ausrüstung
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1. ** Set the idle auxiliary spring at $n = 400 \text{ min}^{-1}$ so that the control-rod travel is exceeded by 0.1 - 0.2 mm.
2. Setting the idle control-lever position:
At 1000 min^{-1} , control rod travel 1.9 - 2.0 mm
3. Check the idle auxiliary spring shutoff
Control-lever position 47° . After change-over point up to 550 min^{-1} no change in control-rod travel. Control-lever position 30° . Speed range $350 \text{ min}^{-1} - 450 \text{ min}^{-1}$
4. Check the pneumatic shutoff box
Control lever at idle stop.
At $n = 375 \text{ min}^{-1}$ and $p_u = 450 \text{ mbar}$ (vacuum) (338 mmHg) the control rod must return quickly to control-rod travel = 0 mm.

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 2,4 11

1. Edition

En

PES 4 M 55 C 320 RS 107-1
RSF 375/2250 M 18

Komb.Nr. 0 400 074 961 | Sales model 0 400 074 958

1- 3- 4 - 2

0-90-180-270

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes -

company Daimler Benz

engine OM 616

53 kW (72 PS)

A. Fuel Injection Pump Settings

Port closing at prestroke 2,20-2,30 mm (from BDC) 20 mm Control rod travel
(2,15-2,35)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (compensating valve) mm
1	2	3	4	2	3	6
1000	13,9+0,1	3,9-4,0	0,25(0,30)			
375	6,5-6,7	0,6-0,7	0,1(0,15)			
1800			0,25(0,3)			
2200			0,25(0,3)			

Set uniform delivery according to the values in

Checking values in brackets

B. Governor Settings

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever	Control rod travel mm	Rotational speed rev/min	Degree of deflection of control lever	Control rod travel mm	Rotational speed rev/min		Rotational speed rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
9-13	(1) min. 11,5 (2) max. 11,0 (3) 6,5-6,7 (4) ** (5) 2,5	250 300 375 400 - 720-820	50	(7) 13,0-13,2 (8) 8,7-9,1 (9) 0-1,0 (10) (11)	2200 2500 2950		(12) 100 (13) 1800 (14) 1000 (6) Switching point	min. 20,3 13,3-13,5 13,9-14,0

C. Settings for Fuel injection Pump with Governor Mounted

Full-load delivery (19)		Full-load speed regulation (8a)	Variations in fuel delivery (17)		Starting fuel delivery (18)		Difference	
Test oil temp 40°C (104°F)								
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	cm ³ /1000 strokes	
1	2	3	4	5	6	7	8	
2200	39,5-41,5 (38,5-42,5)	2500* RW 8,7-9,1	1800	39,0-41,0 (38,0-42,0)	100	min. 53,0	6,0	(12a)
			1000	39,0-40,0 (38,0-41,0)	375	6,0-7,0 (5,5-9,0)	1,0 1,5	(15)
					2500	23,0-27,0 (22,0-28,0)	2,5 3,0	See 8 a (16)

Checking values in brackets

ca. 4,2 mm control rod travel than in Column 2

1. ** Set the idle auxiliary spring at $n = 400 \text{ min}^{-1}$ so that the control-rod travel is exceeded by 0.1 - 0.2 mm.
2. Setting the idle control-lever position:
At 1000 min^{-1} , control rod travel 1.9 - 2.0 mm
3. Check the idle auxiliary spring shutoff
Control-lever position 47° . After change-over point up to 550 min^{-1} no change in control-rod travel. Control-lever position 30° . Speed range $350 \text{ min}^{-1} - 450 \text{ min}^{-1}$
4. Check the pneumatic shutoff box
Control lever at idle stop.
At $n = 375 \text{ min}^{-1}$ and $p_u = 450 \text{ mbar}$ (vacuum) (338 mmHg) the control rod must return quickly to control-rod travel = 0 mm.